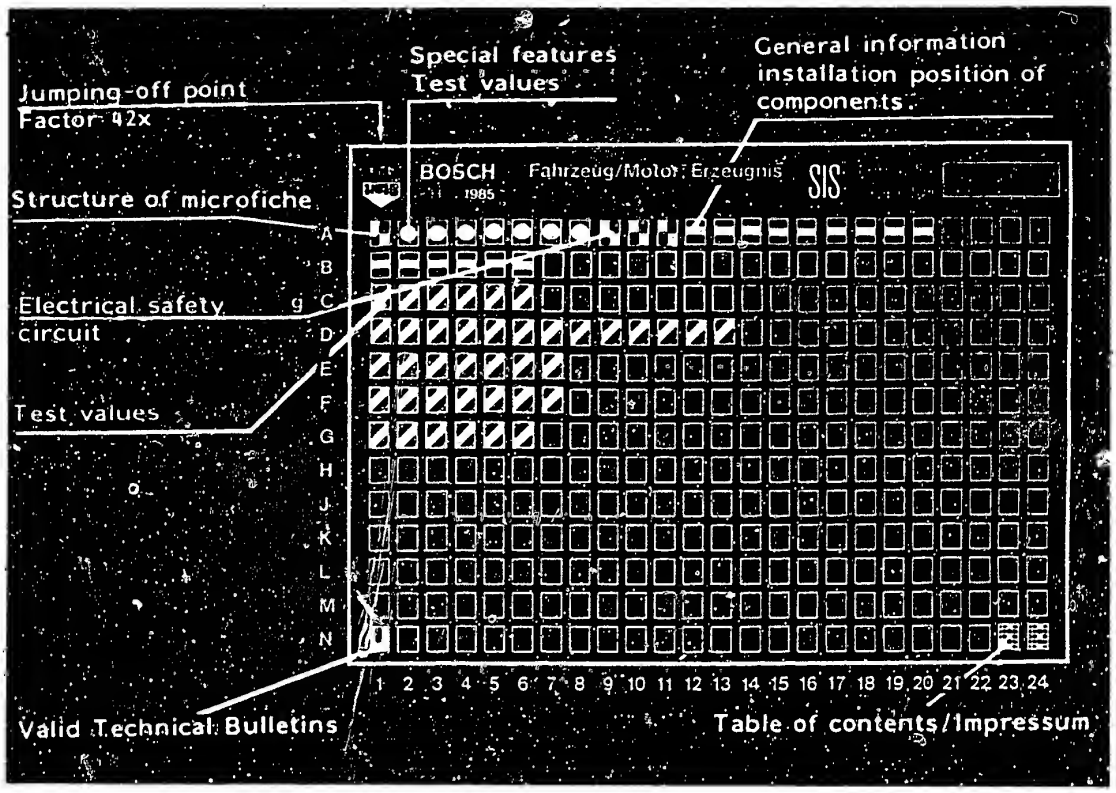
Structure of microfiche



1. Read from left to right
2. Title of microfiche (appears on each coordinate)

E16	Product/component/test step Vehicle/engine

Coordinate

3. Limits of section

Beginning	Mid-section	End	One-page section

4. Purely vehicle-specific passages in the text are marked with a vertical bar.

This SIS microcard replaces the following publications (repair instructions and test-specification sheets):
VDT-W-438/526 En
VDT-W-438/1023 En
VDT-W-438/1041 En
VDT-W-438/1032 En
VDT-W-438/1040 En

In addition, the test specifications of further Ferrari models with K-Jetronic are contained.

1. FERRARI

- 400i GT
- 400i Automatic

4.8l / 12-cylinder engine
Europe version (1.1979 →)

1.1 Special features

- 2 complete 6-cylinder K-Jetronic systems are installed for this 12-cylinder engine.
- Warm-up regulator for intake-manifold-dependent full-load enrichment.
- The inlet lines of the two warm-up regulators are joined together because of the necessary control-pressure equalization.
- Fuel accumulator with 40 cm^3 storage volume.
- For each warm start, the start valves are energized by a pulse relay and inject extra fuel intermittently into both intake manifolds. When cold-starting, this function is superimposed by the thermo-time switch.

1.2 TEST SPECIFICATIONS

Test step

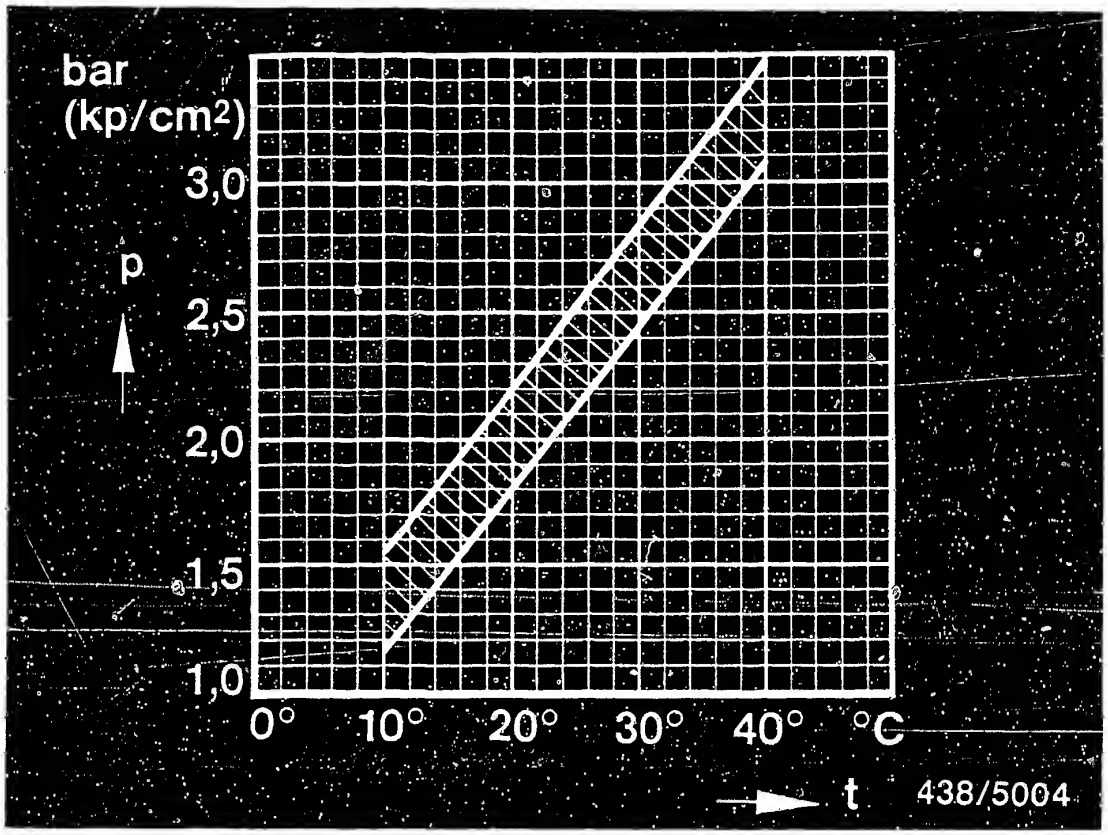
1.2.1 Electric fuel pump 0 580 254 947

- Fuel delivery: min. 900 cm^3/30 s
- Terminal voltage: min. 11.5 V (under load)

1.2.2 Fuel distributor 0 438 100 055

	Checking values	Setting value
• Primary pressure	4.9...5.6 bar* (5.0...5.7 kp/cm^2)	5.1...5.3 bar* (5.2...5.4 kp/cm^2)

* Gauge pressure



p = Control pressure (gauge pressure)
t = Ambient temperature

1.2.3 Warm-up regulator 0 438 140 033

(Version for full-load enrichment)

- Fuel delivery for the control-pressure circuit: 160...240 cm^3/min.

- Control pressure "cold"

  Remove connecting line in inlet of both warm-up regulators. For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

Setting value: 500 ... 550 mbar
(375...415 mmHg)

Test step

- Control pressure "warm"

  Warm-up regulator 0 438 140 033
  (Version for full-load enrichment)

  Remove connecting line in inlet of both warm-up regulators.

- Test with atmospheric pressure (without vacuum):
  2.7...3.1 bar*
  (2.8...3.2 kp/cm²)

- For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting values:
  500...550 mbar
  (375...415 mmHg): 3.4...3.8 bar* (3.5...3.9 kp/cm²)

- Leak test on full-load diaphragm
  Max. allowable pressure drop from setting value:
  100 mbar (75mmHg)/ 15 s

1.2.4 Fuel accumulator 0 438 170 004

- Leak test

Min. pressure: after 10 min.	after 20 min.
2.7 bar* (2.8 kp/cm²)	2.6 bar* (2.7 kp/cm²)

* Gauge pressure

Test step

1.2.5 Injection valve 0 438 502 010

- Opening pressure: 3.0...4.1 bar* (3.1...4.2 kp/cm²)
- Leak test:
  not below 2.8 bar*: no drop may fall within 25s.

1.2.6 Fuel distributor 0 438 100 055

- Comparative measurement of fuel deliveries:

	Setting point	max. allowable delivery
Idle	6.0 cm³/min.	6.6 cm³/min.
Part load	40.0 cm³/min.	43.0 cm³/min.
Full load	145.0 cm³/min.	160.0 cm³/min.
This delivery must be obtained at least at each outlet.		

* Gauge pressure

Test step

1.2.8 Thermo-time switch 0 280 130 220

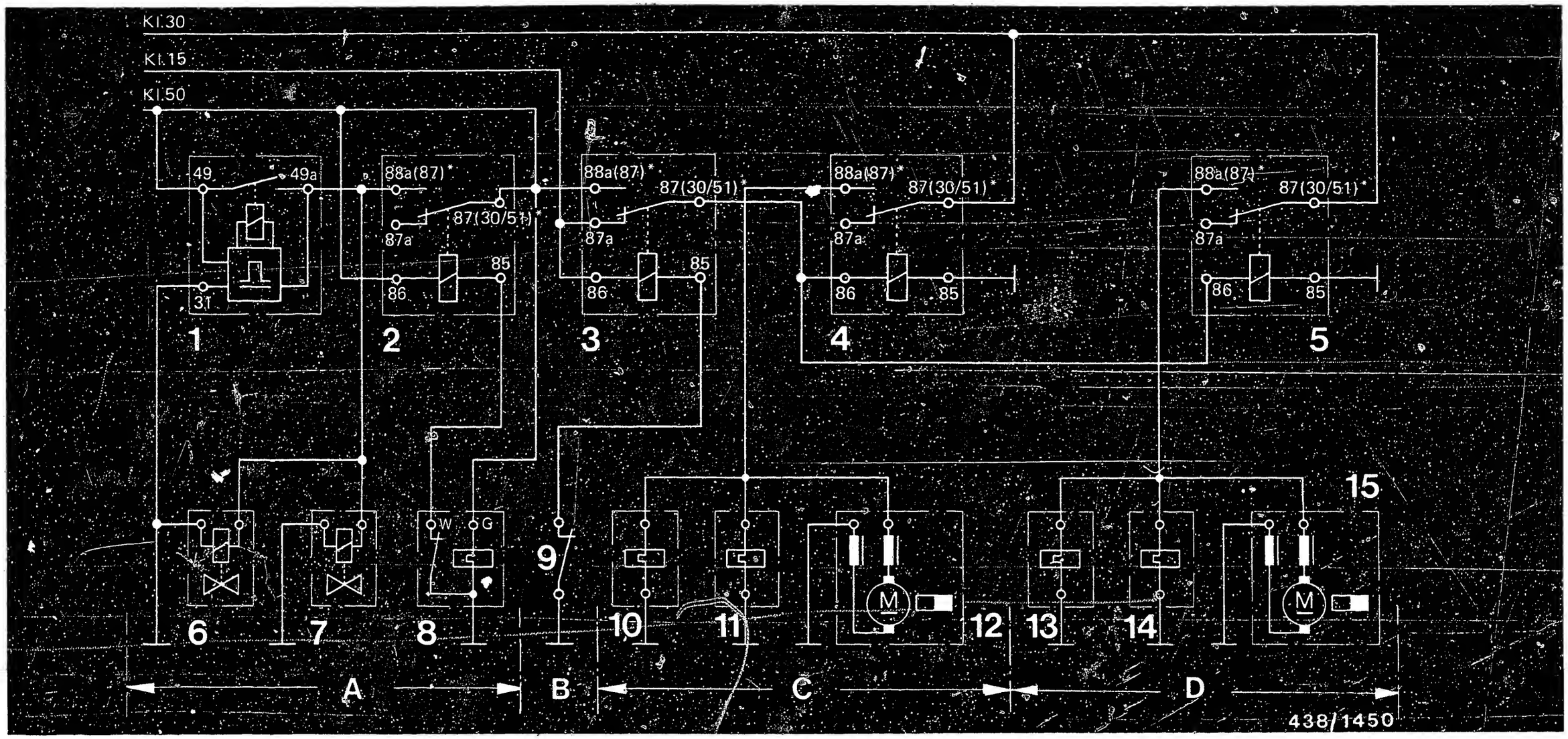
- Resistance measurement between

at temperature below °C	above °C	Term. "G" and "ground" (housing)	Term. "W" and "ground" (housing)	Term. "G" and term. "W"
+30		40...60 Ω	0 Ω	40...60 Ω
	+40	50...70 Ω	240...300 Ω	180...240Ω

1.2.9 Idle adjustment *

- Idle speed (at synchronized intake-manifold pressure) 900...1100 min^{-1}
- CO concentration (of each cylinder bank) 1.0...2.0 vol. %

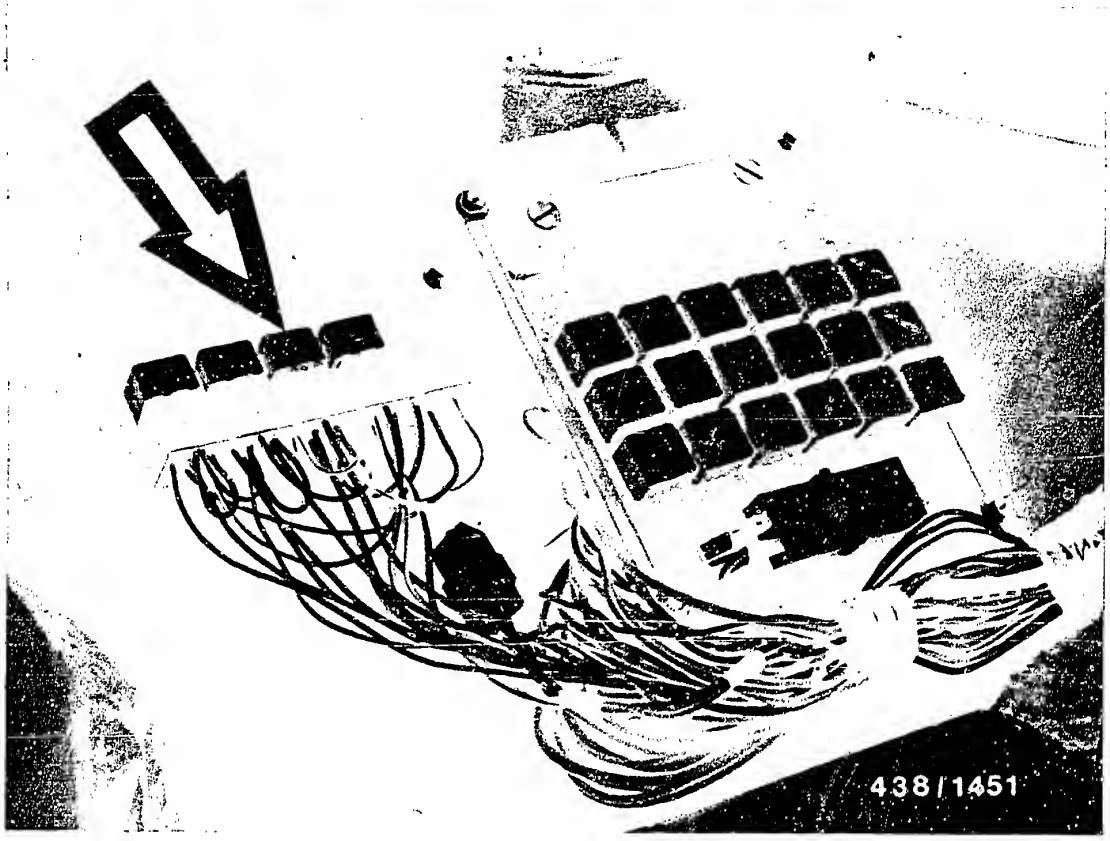
* For adjusting/checking the idle: switch off air conditioner, engine at normal operating temperature, oil temperature approx +80°C. The vacuum limiter must be leak-tight.



1 = Pulse generator
2 = Auxiliary starting relay
3 = Starting relay
4 = Fuel pump relay
5 = Fuel pump relay
6 = Start valve
7 = Start valve
8 = Thermo-time switch
9 = Air-flow sensor contact
10 = Warm-up regulator
11 = Auxiliary-air device
12 = Electric fuel pump
13 = Warm-up regulator
14 = Auxiliary-air device
15 = Electric fuel pump
A = Starting enrichment
B = Safety device
C = Component group 1
D = Component group 2

1.3 Electrical safety circuit

The electrical safety circuit can be seen from the circuit diagram. It functions like the basic version with safety contact on the air-flow sensor (9).



The relays (arrow) of the safety circuit are in the central-electric box in the right-hand footwell.

Differences:
2 fuel pump relays are energized by the starting relay.

Cold starting:
For cold starting, the two start valves are supplied with power by the thermo-time switch via the auxiliary starting relay.

Warm starting:
Both start valves obtain pulsed voltage via the pulse generator and therefore inject intermittently.
The safety circuit is jumped by disconnecting the plug from the air-flow sensor and switching on the ignition.

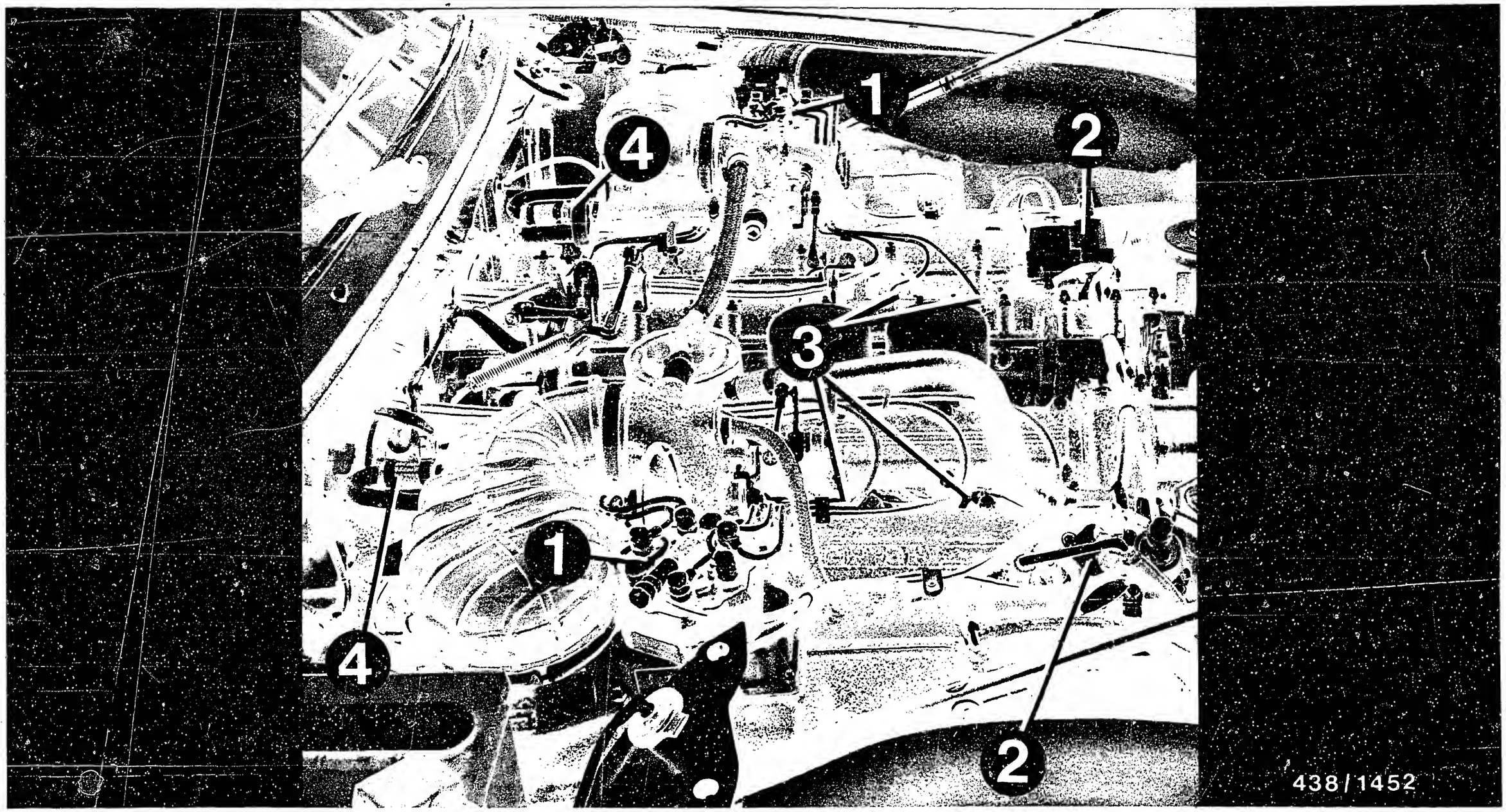
1.4 General information

- Never deflect (raise) the air-flow sensor plate with the electric fuel pump operating, sinch fuel will be injected through the injection valves.
  Subsequent operation of the starting motor may lead to serious engine damage.

- Note the regulations on test media for testing the injection valves with valve tester.
  Never perform test with normal gasoline or other easily inflammable liquids.
  Even when using test gasoline, observe the local safety regulations.

- Leak test on engine intake system only with allowable leak-detector spray (e.g. Gypoflex).
  Do not use any easily inflammable liquids. Observe local safety regulations.

- The Ferrari 400i is equipped with fuel distributors with adjustable differential-pressure valves. With this version of fuel distributor, screw plugs are situated adjacent to the connections for the injection lines. This adjustment possibility was introduced only for production at the factory. It does not result in any additional adjustment possibilities for the after-sales service. The fuel distributor should, therefore, be treated in precisely the same manner as the normal version. The screw plugs must not be loosened or removed.



1.5 Installation position of individual components

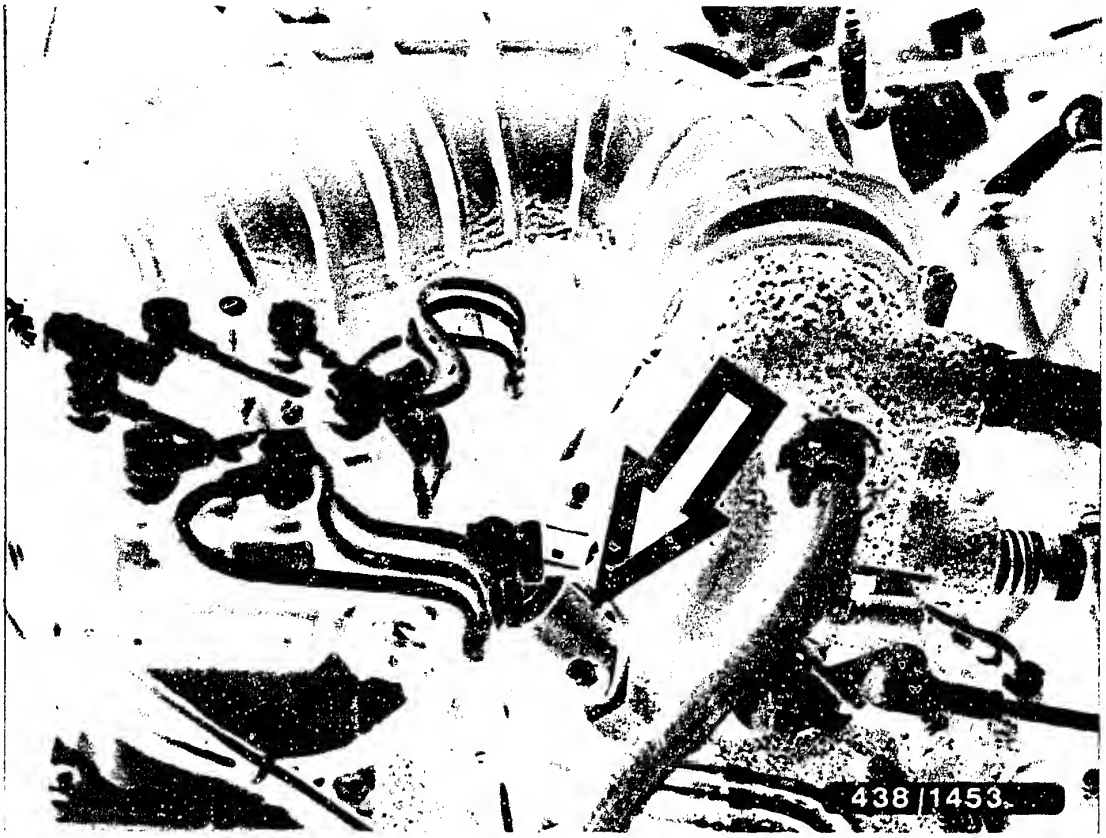
1.5.1 Arrangement of components on engine

1 = Mixture-control unit

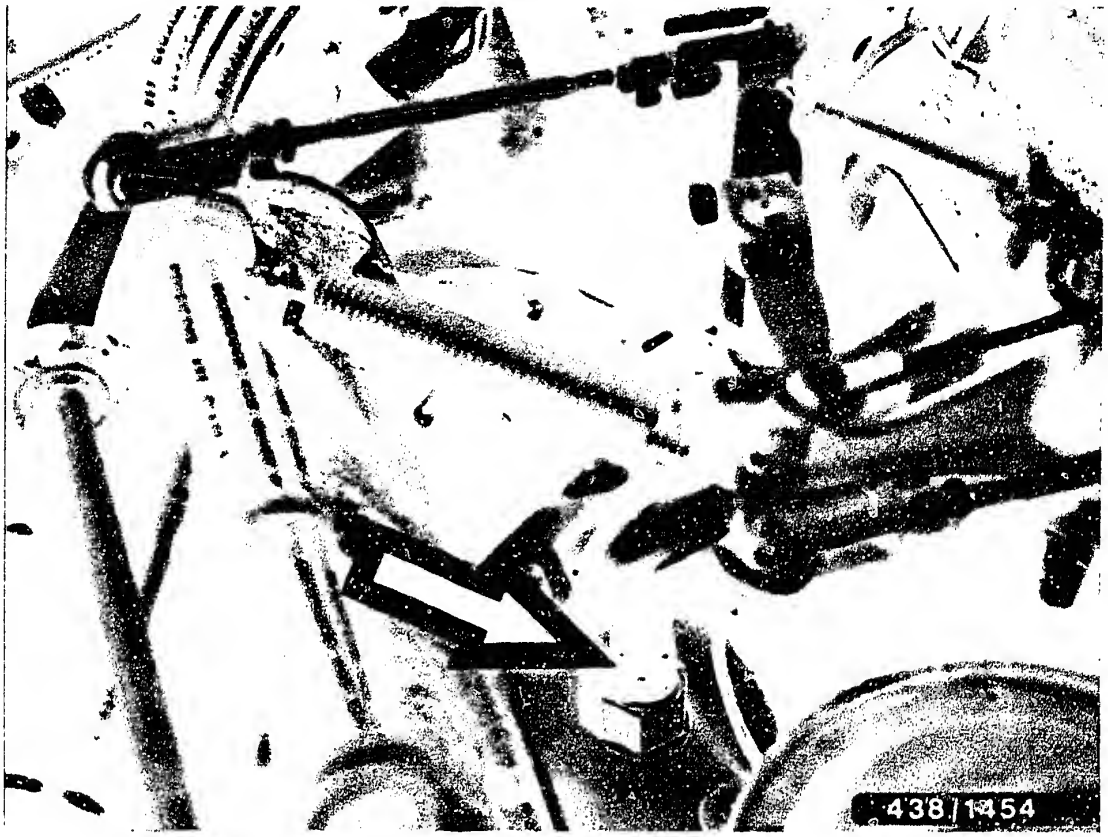
2 = Warm-up regulator

3 = Injection valves

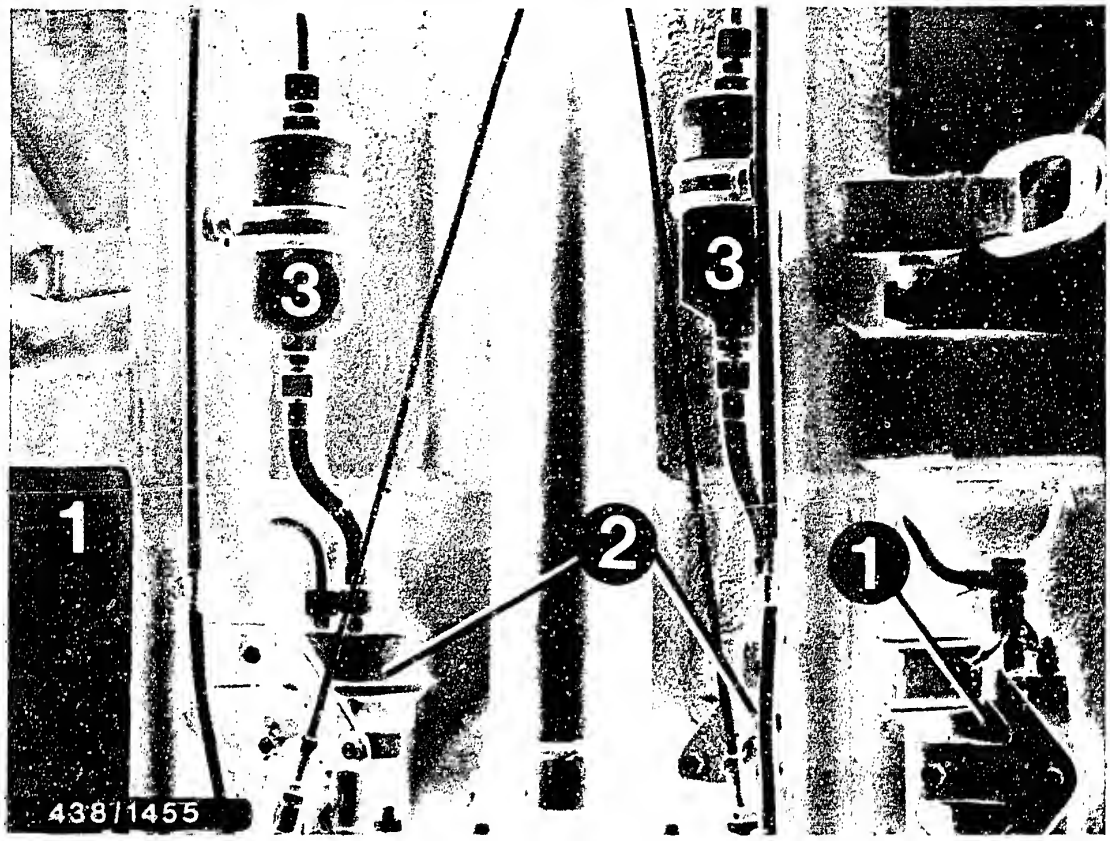
4 = Auxiliary-air device



Start valve (arrow)



Thermo-time switch (arrow)

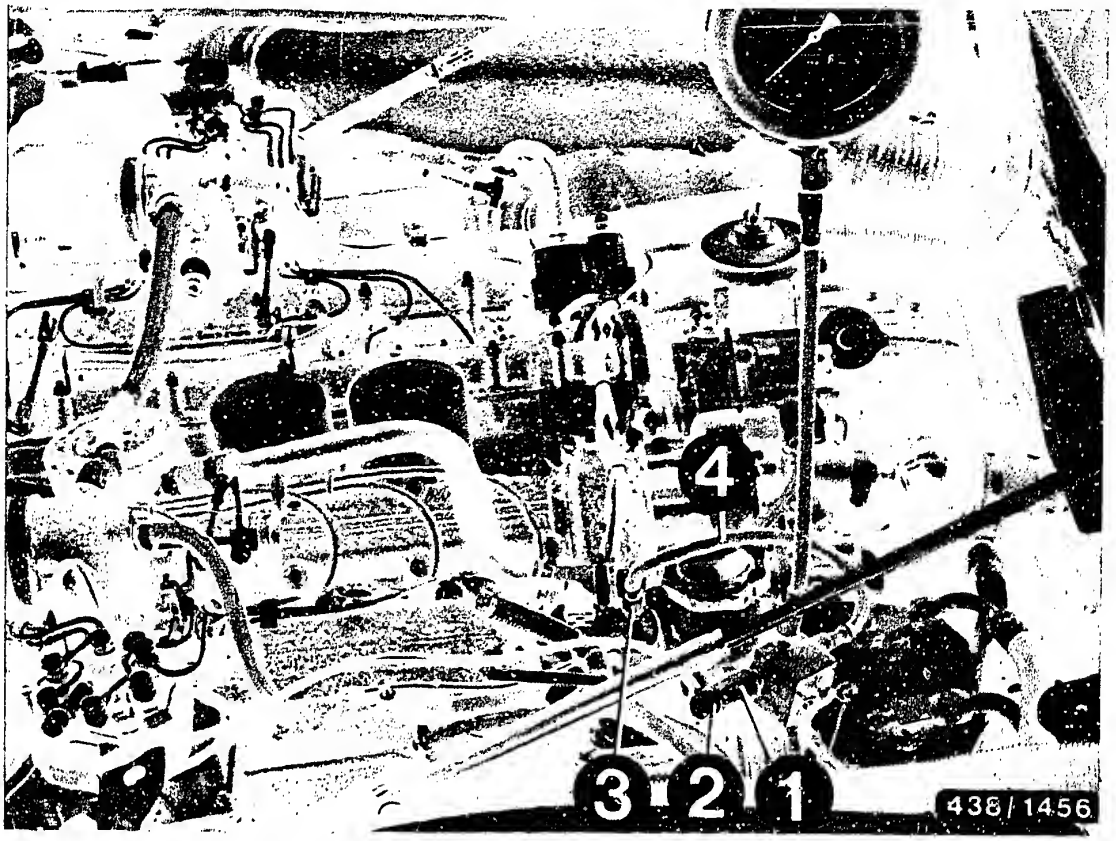


1.5.2 Fuel-supply components

On both side members in front of the rear axle there are brackets on which the following components are mounted:

1 = Electric fuel pumps
The cover plate of the electric fuel pump mounted at the bottom right in the picture has been removed.
2 = Fuel accumulators
3 = Fuel filters

Due to the high incidence of dirt at the place of installation, always thoroughly clean the connections of these components before loosening.

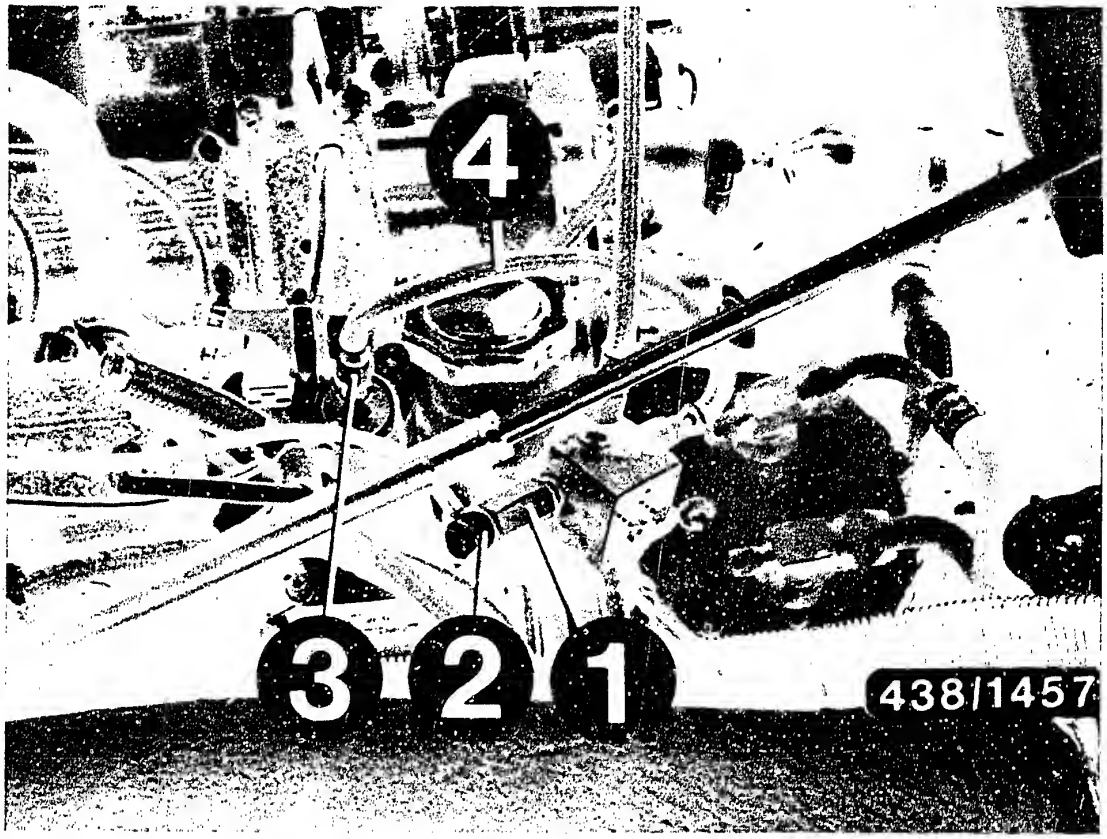


1.6 Pressure measurements

Mounting the pressure tester KDJE-P 100 or KDEP 1024.

The connecting-parts set KDJE-P 100/12 with seals is additionally required for connecting the pressure tester.

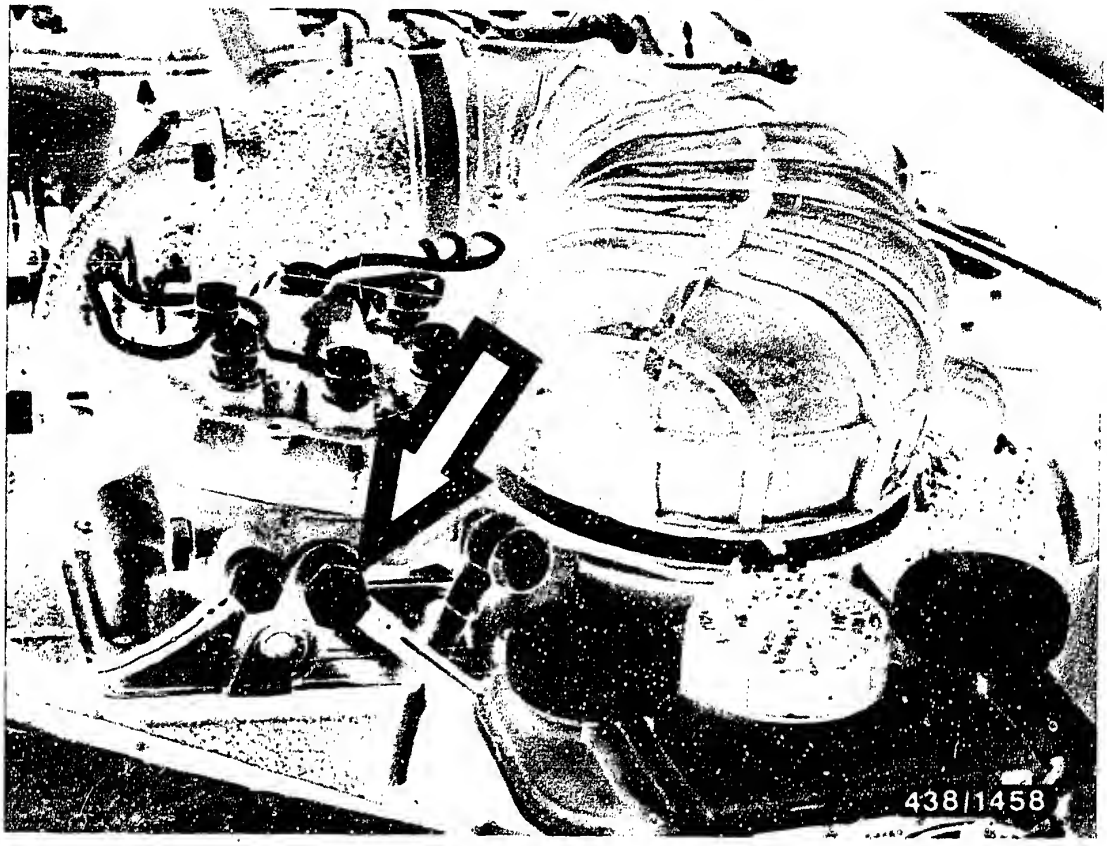
Unscrew connecting line from the inlets of both warm-up regulators.



Screw the adapter KDEP 1034/12/1 with seal onto connection 1 of the three-way valve (1).
Connect control-pressure line (coming from fuel distributor) with inlet-union screw M 10 x 1 and copper seal rings to the adapter (2).

Screw connecting part KDEP 1024/12/2 into warm-up regulator inlet (3). Connect hose line of 3-way valve to connecting part (4).

Connect the pressure tester in the same way for testing the second K-Jetronic system.



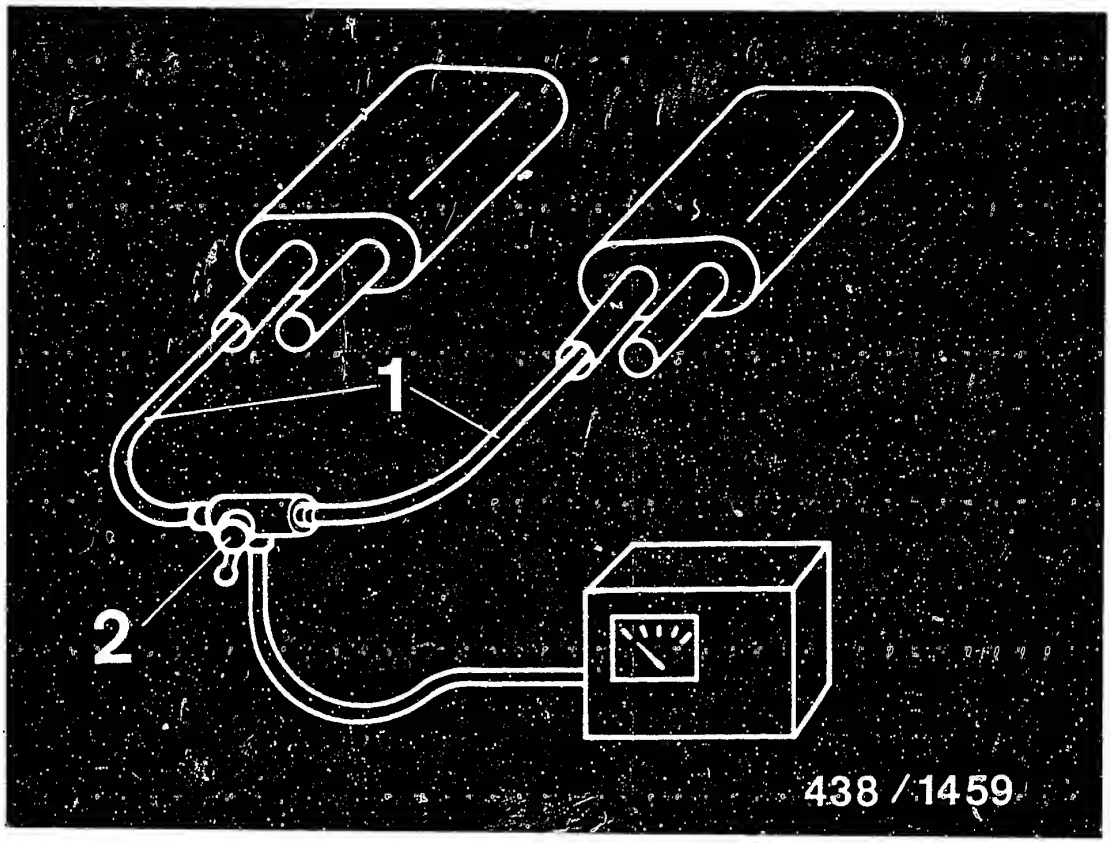
1.7 Checking the operation of the electric fuel pump

For measuring the fuel delivery, unscrew the fuel return line from the fuel distributor (arrow).

Equip test hose with inlet union and connect with inlet-union screw M 12 x 1.5 and copper seal rings to the return connection of the fuel distributor.

Hold hose line in measuring glass to make measurement.

The fuel-delivery measurement on the 2nd electric fuel pump is performed at the return connection of the other fuel distributor.

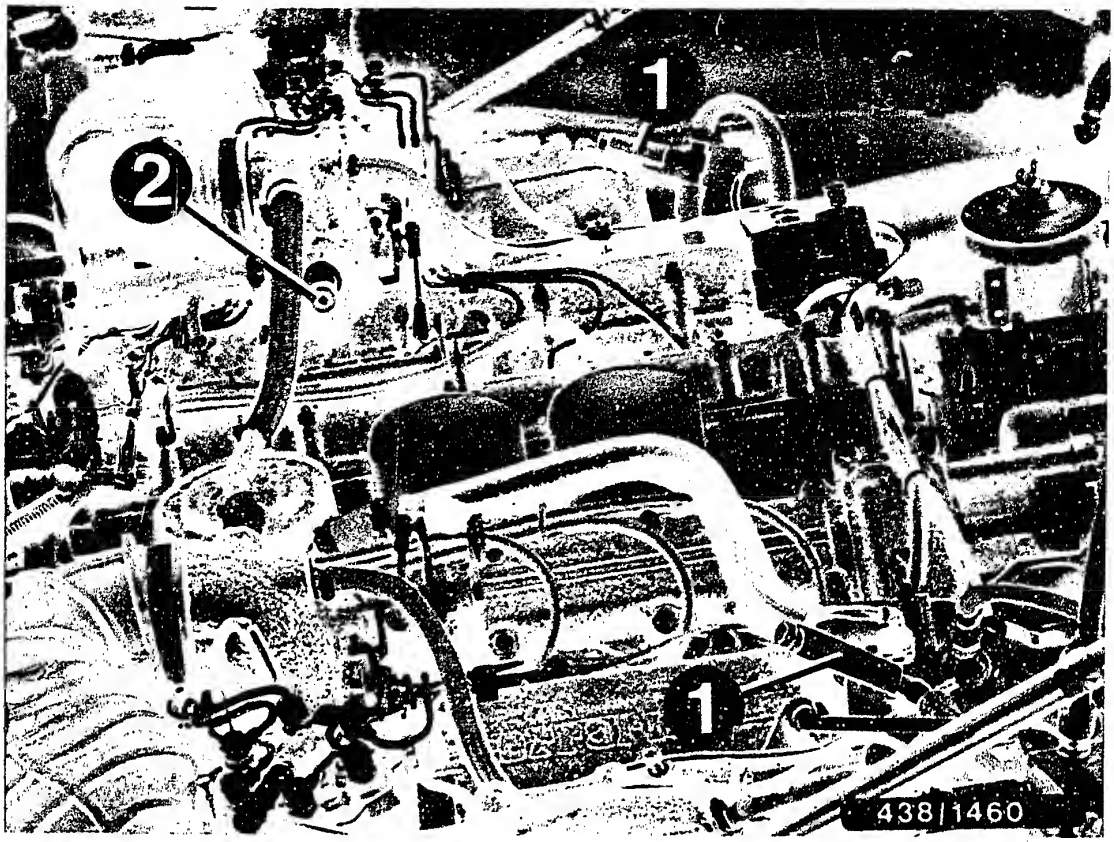


1.8 Idle adjustment

1.8.1 Preparations for idle adjustment

The exhaust gas for the CO measurement is sampled separately in the exhaust tail pipes for both cylinder banks.

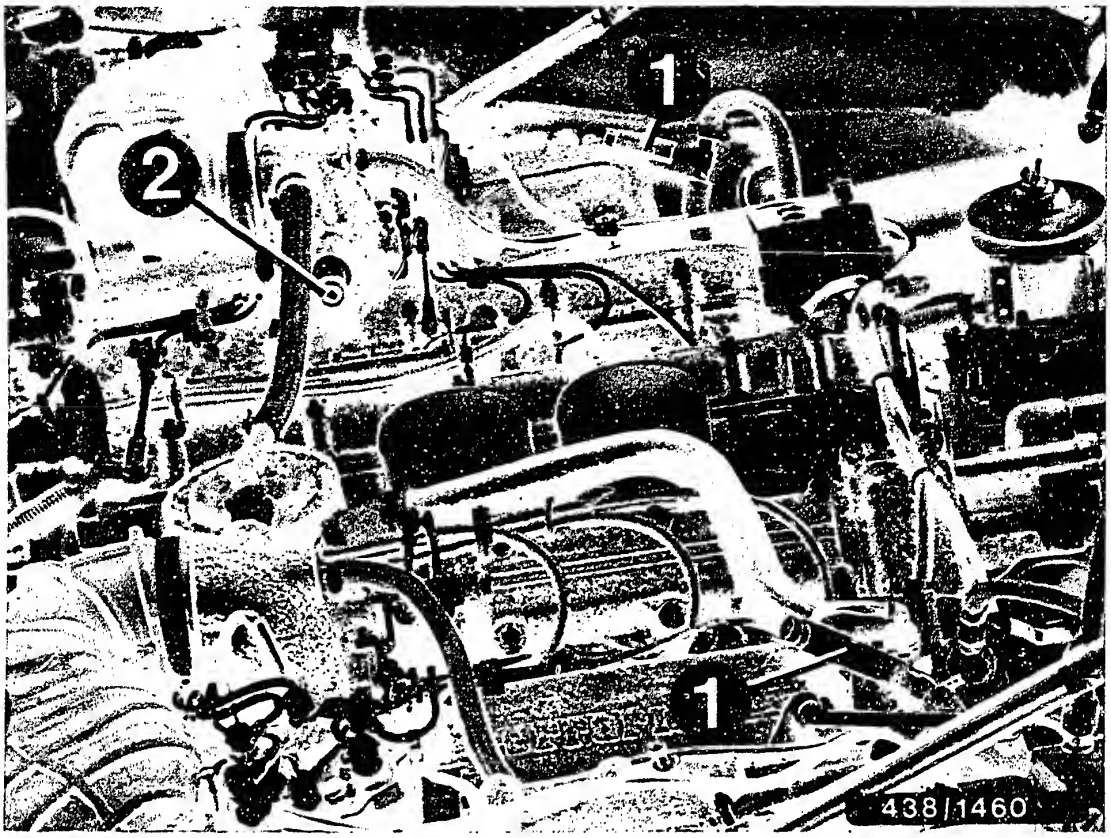
The picture shows an exhaust-gas sampling kit as an example for user fabrication.
The two hose lines (1) must be resistant to the exhaust temperatures and are routed together at a commercially available three-way change-over cock (2). Minimum bore diameter of the three-way cock 4 mm.



1.8.2 Idle adjustment

To balance the two cylinder banks, connect balance tester (double vacuum meter) to the warm-up regulator intake-manifold pressure hoses. Fitting (1) with T-piece to be user-fabricated.

Adjust the idle speed at the two bypass screws (2) of the throttle-valve assemblies.
Make sure that equal intake-manifold pressures are obtained.

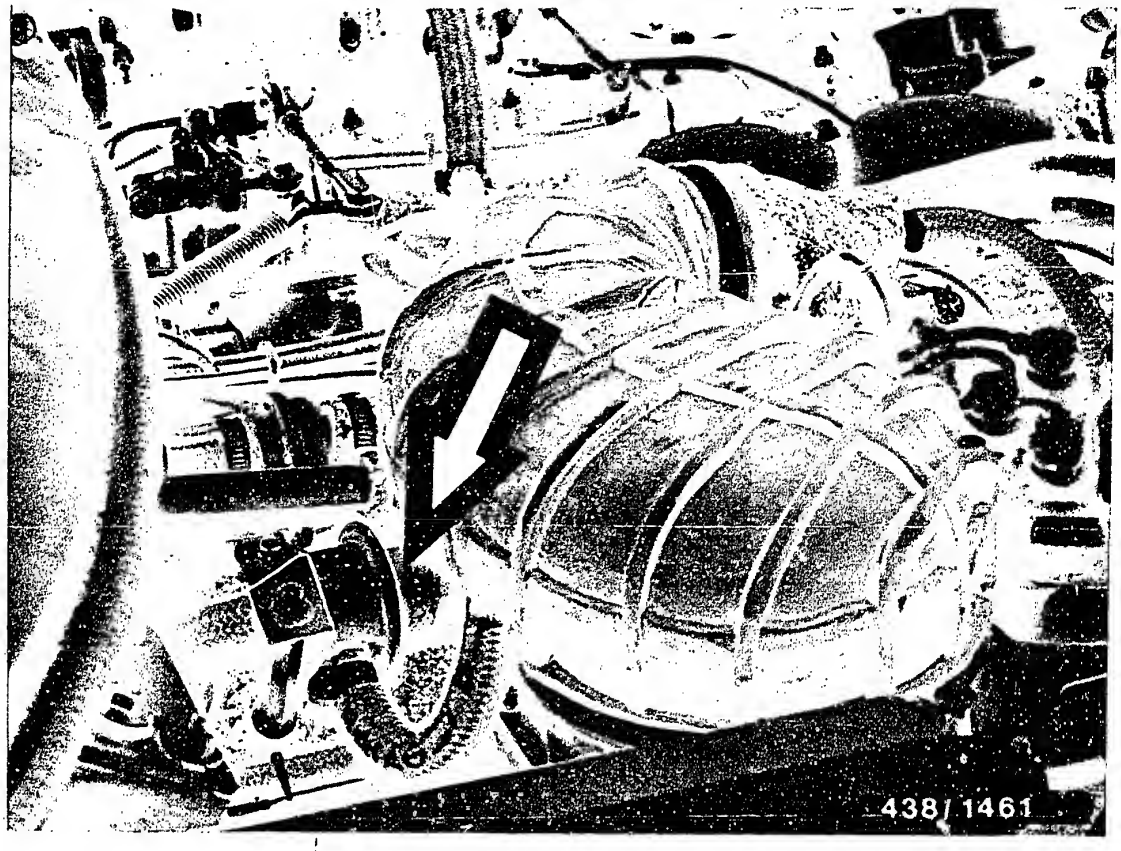


1.8.3 CO adjustment

Adjust the CO concentration in the exhaust gas at the idle-mixture-adjusting screws of the two mixture-control units.
Check the CO value of both cylinder banks individually by changing over the three-way cock. The exhaust gas from both cylinder banks is sampled with the three-way cock in the center position.

All adjustments (engine speed, CO concentration of both cylinder banks, total CO) may possibly have to be repeated several times until all values are within the specified range.

Note:
The hole to the idle-mixture-adjusting screw is sealed by a lead anti-tamper cap.

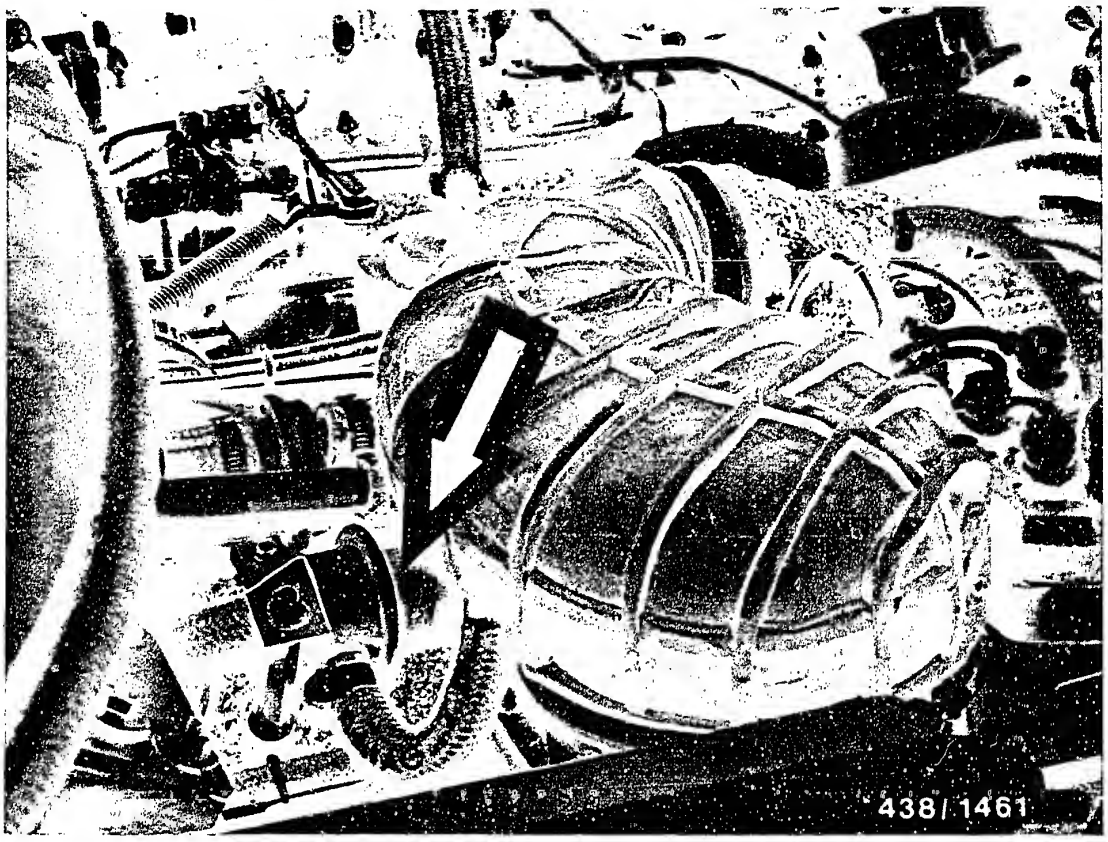


1.8.4 Checking the vacuum limiter

The vacuum limiter (arrow) is a vacuum-controlled auxiliary-air valve which opens only on overrun. In all other operating states, the vacuum limiter must be leak-tight.

The vacuum limiter can be checked as follows:

Measure idle speed with vacuum limiter connected (engine at normal operating temperature). Then switch off engine.



Disconnect vacuum hose from fitting on vacuum limiter and seal tight (arrow); concealed by rubber air box). Start engine again and measure idle speed. It must not differ from the previous measurement. If the engine speed has dropped, the vacuum limiter is leaking. If it is leaking badly, the idle speed is too high and can no longer be adjusted.

Replace vacuum limiter if leaking.

1.9 Removal and installation of components

Basically, removal and installation poses no problems. Reference is therefore made only to points requiring particular attention.

Electric fuel pump and fuel accumulator

To replace an electric fuel pump, it is necessary to remove the cover plate.

Before loosening, pinch off the intake hose so that no fuel can escape (e.g. using hose clamper W 157 from Matra).

To loosen or tighten the screw connections on pump and accumulator, hold the fixed hexagonal section with a wrench.

Other components

Clean all fuel connections thoroughly before loosening. Always provide connections with new seals.

If seals are loosened on the intake system, also replace these.
When installing the mixture-control unit, tighten the fastening screws uniformly.

To loosen or tighten the injection lines, hold the hexagonal sections of the injection valves with a wrench.

2. FERRARI

- 208 GTB-Turbo

2.01 / 8-cylinder turbo engine
Europe version (6.1982 →)

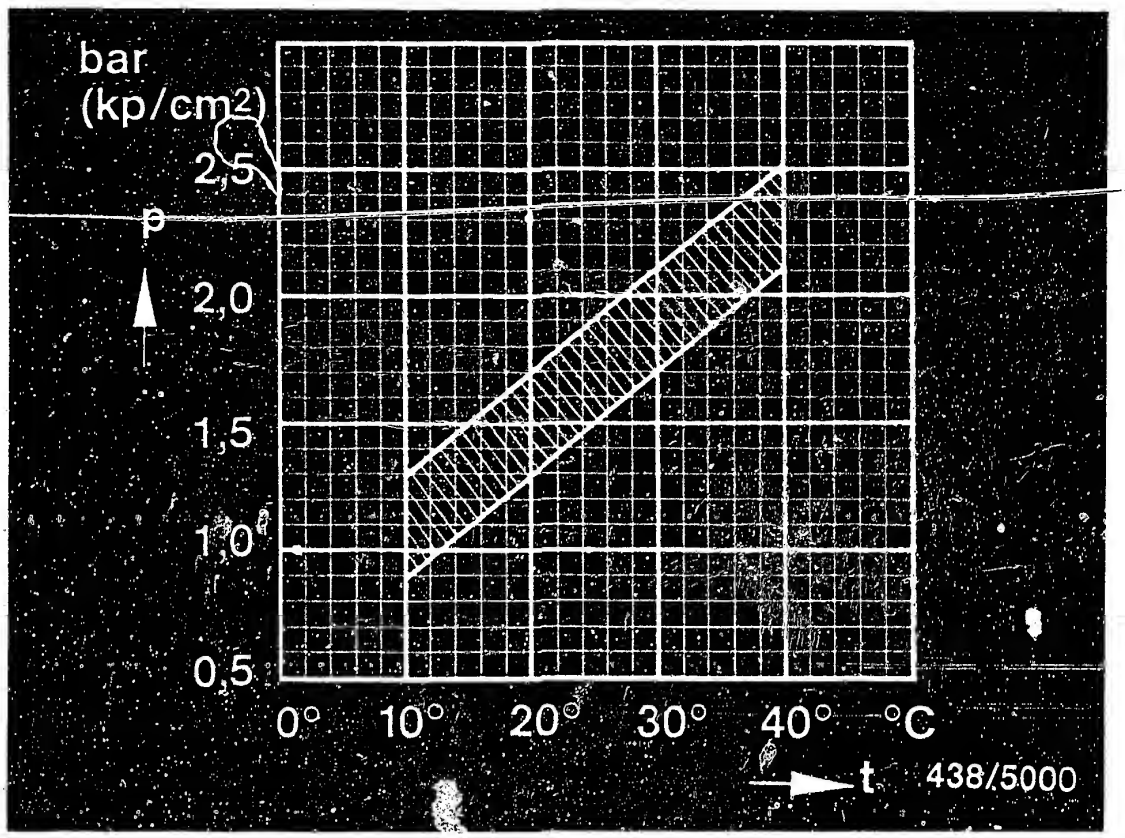
TEST SPECIFICATIONS

Test step	
2.1 Electric fuel pump 0 580 254 956	
• Fuel delivery:	min. 1000 cm³/30 s
• Terminal voltage:	min. 11.5 V (under load)

2.2 Fuel distributor 0 438 100 111

• Primary pressure	Checking values	Setting value
	4.7...5.4 bar* (4.8...5.5 kp/cm²)	4.9...5.1 bar* (5.0...5.2 kp/cm²)

* Gauge pressure



p = Control pressure (gauge pressure)
t = Ambient temperature

2.3 Warm-up regulator 0 438 140 034

(Version with separate full-load enrichment)

- Fuel delivery for control-pressure circuit 160...240 cm^3/min.

- Control pressure "cold"

  For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting value: 400...600 mbar
  (300...450 mmHg)

Test step

- Control pressure "warm"

  Warm-up regulator 0 438 140 034
  (Version with separate full-load enrichment)

- Test with atmospheric pressure (without vacuum)
  2.7...3.1 bar*
  (2.8...3.2 kp/cm²)

- For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator:

  Setting values:
  400...600 mbar (300...450 mmHg)
  3.4...3.8 bar* (3.5...3.9 kp/cm²)

- Leak test on full-load diaphragm
  Max. allowable pressure drop from setting value: 100 mbar (75 mmHg)/15s

2.4 Fuel accumulator 0 438 170 004

- Leak test

Minimum pressure:	after 10 min	after 20 min
	2.7 bar* (2.8 kp/cm²)	2.6 bar* (2.7 kp/cm²)

* Gauge pressure

Test step

2.5 Injection valve 0 438 502 010

- Opening pressure: 3.0...4.1 bar* (3.1...4.2 kp/cm²)
- Leak test:
  not below 2.8 bar*: no drop may fall within 25s.

2.6 Fuel distributor 0 438 100 111

- Comparative measurement of fuel deliveries:

	Setting point	max. allowable delivery
Idle	6.0 cm³/min.	6.6 cm³/min.
Part load	40.0 cm³/min.	43.0 cm³/min.
Full load	120.0 cm³/min.	132.0 cm³/min.
This delivery must be obtained at least at each outlet.		

* Gauge pressure

Test step

2.7 Thermo-time switch 0 280 130 220

- Resistance measurement between

at temperature below °C	above °C	Term. "G" and "ground" (housing)	Term. "W" and "ground" (housing)	Term. "G" and term. "W"
+30		40...60 Ω	0 Ω	40...60 Ω
	+40	50...70 Ω	240...300 Ω	180...240Ω

2.8 Idle adjustment *

- Idle speed 900...1100 min^{-1}

- CO concentration (of both cylinder banks) 1.0...2.0 vol. %

* For adjusting/checking the idle:
Switch off air conditioner, engine at normal operating temperature, oil temperature approx +80°C.

3. FERRARI

- Mondial 8
- 308 GTB
- 308 GTS

3.0 l / 8-cylinder engine
Europe version (5.1980 → 5.1982)

- Mondial 8
- 308 GTB
- 308 GTS

3.2 l (3.0 l) / 8-cylinder engine (32 valves)
Europe version (6.1982 →)

- 308 GTS i (1.1980 → 1.1984)
- 308 GTB, Mondial (6.1981 → 1.1984)

US version <u>without</u> lambda closed-loop control

TEST SPECIFICATIONS

Test step

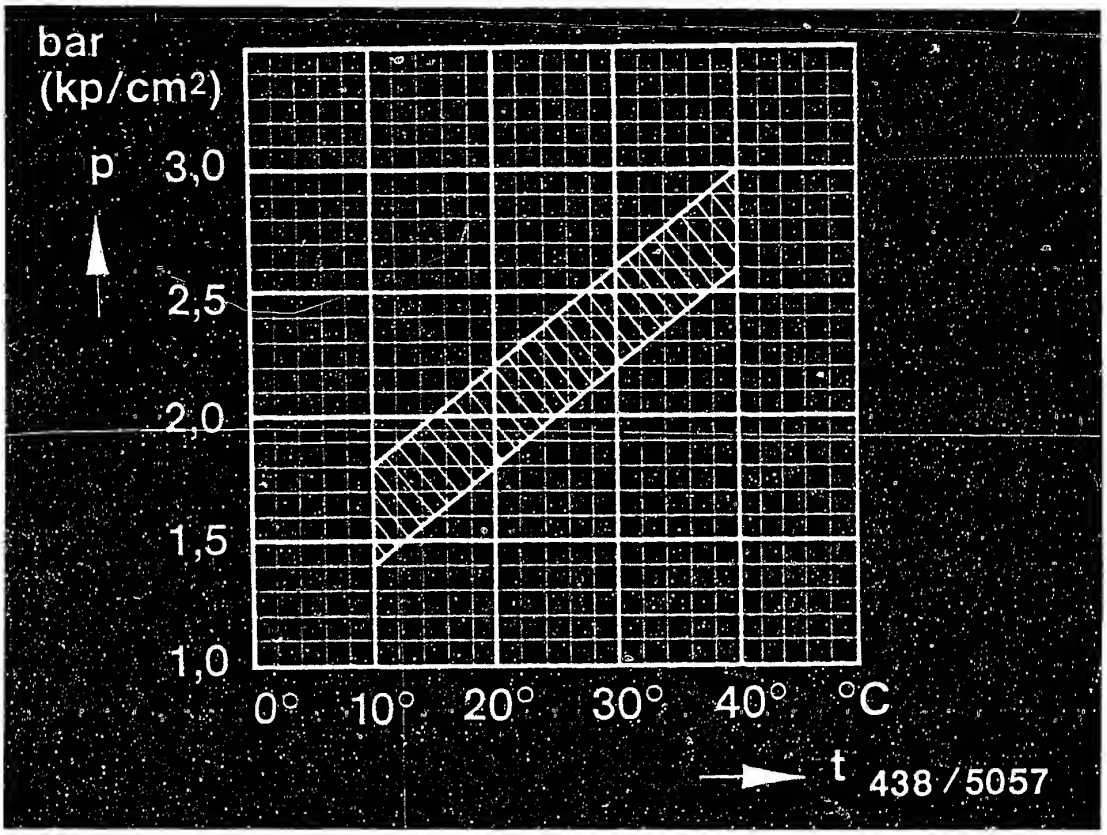
3.1 Electric fuel pump 0 580 254 947

- Fuel delivery: min.1100 cm^3/30 s
- Terminal voltage: min. 11.5 V (under load)

3.2 Fuel distributor 0 438 100 034

• Primary pressure	Checking values	Setting value
	4.9...5.6 bar* (5.0...5.7 kp/cm^2)	5.1...5.3 bar* (5.2...5.4 kp/cm^2)

* Gauge pressure



p = Control pressure (gauge pressure)
t = Ambient temperature

3.3.1 Warm-up regulator 0 438 140 116

(Version with separate full-load enrichment)

- Fuel delivery for control-pressure circuit 160...240 cm^3/min.

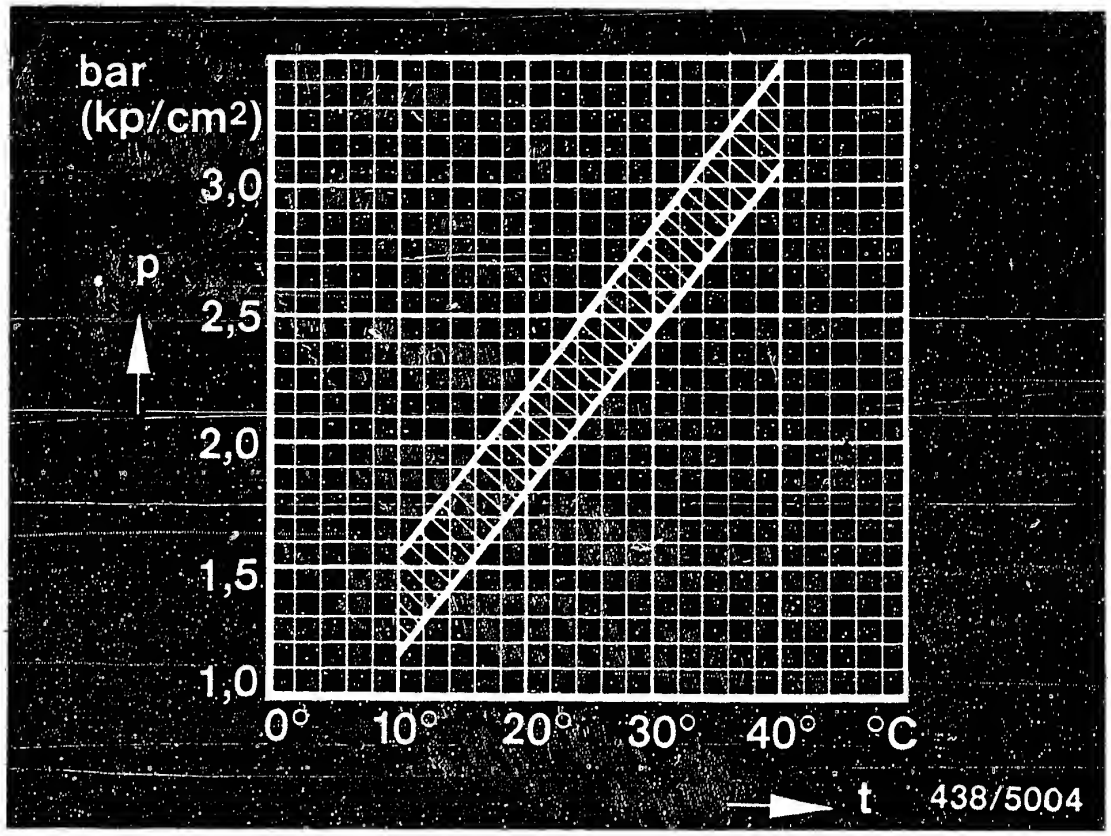
- Control pressure "cold"

  For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting value: 400...600 mbar
  (300...450 mmHg)

Test step	
• Control pressure "warm"	
Warm-up regulator (Version with separate full-load enrichment)	0 438 140 116
• Test with atmospheric pressure (without vacuum)	2.7...3.1 bar* (2.8...3.2 kp/cm²)
• For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.	
Setting values:	
400 ... 600 mbar (300 ... 450 mmHg	3.5...3.9 bar (3.6...4.0 kp/cm²)
• Leak test on full-load diaphragm Max. allowable pressure drop from setting value:	100 mbar (75 mmHg) /15s

* Gauge pressure



p = Control pressure (gauge pressure)
t = Ambient temperature

3.3.2 Warm-up regulator 0 438 140 033

(Version with separate full-load enrichment)

- Fuel delivery for control-pressure circuit
  160...240 cm^3/min.

- Control pressure "cold"

  For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting value: 400...600 mbar
  (300...450 mmHg)

Test step

- Control pressure "warm"

  Warm-up regulator 0 438 140 033
  (Version with separate full-load enrichment)

- Test with atmospheric pressure (without vacuum)
  2.7...3.1 bar*
  (2.8...3.2 kp/cm²)

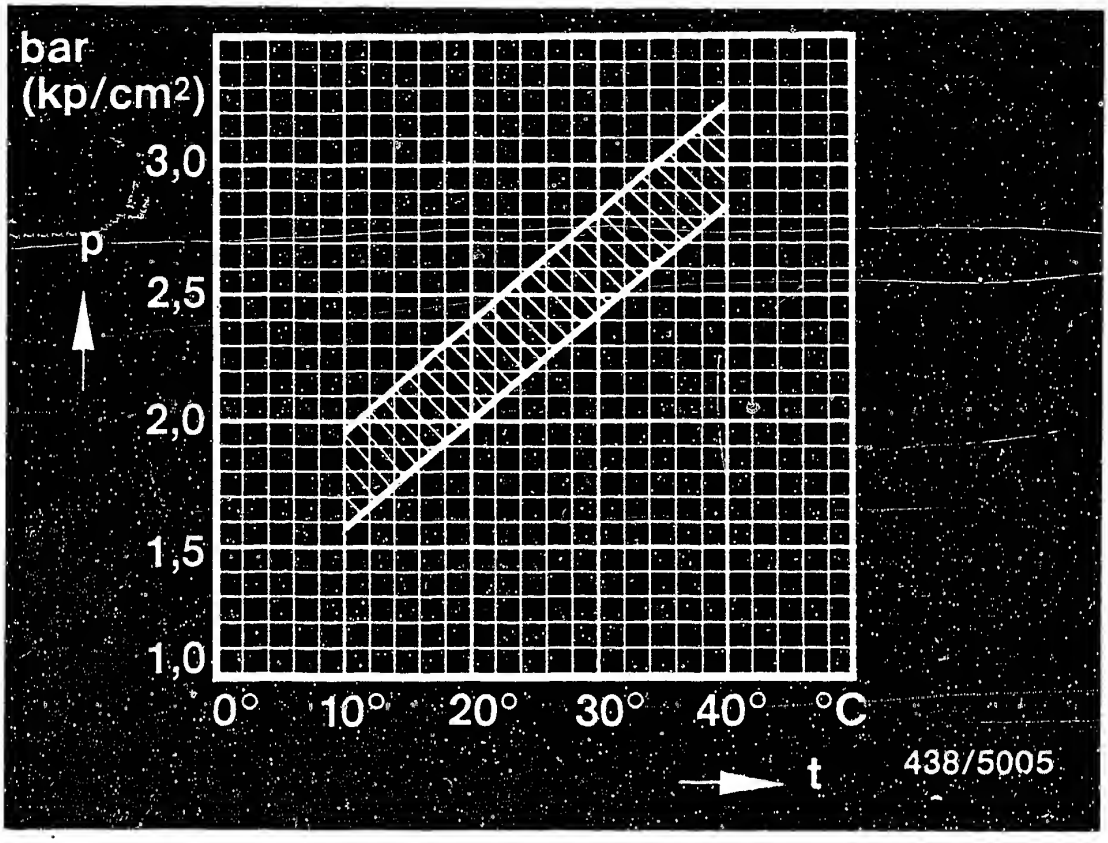
- For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting values:

500 ... 550 mbar	3.4...3.8 bar*
(375...412 mmHg)	(3.5...3.9 kp/cm²)

- Leak test on full-load diaphragm
  Max. allowable pressure drop
  from setting value: 100 mbar (75 mmHg) /15s

* Gauge pressure



p = Control pressure (gauge pressure)
t = Ambient temperature

3.3.3 Warm-up regulator 0 438 140 083 up to FD 046

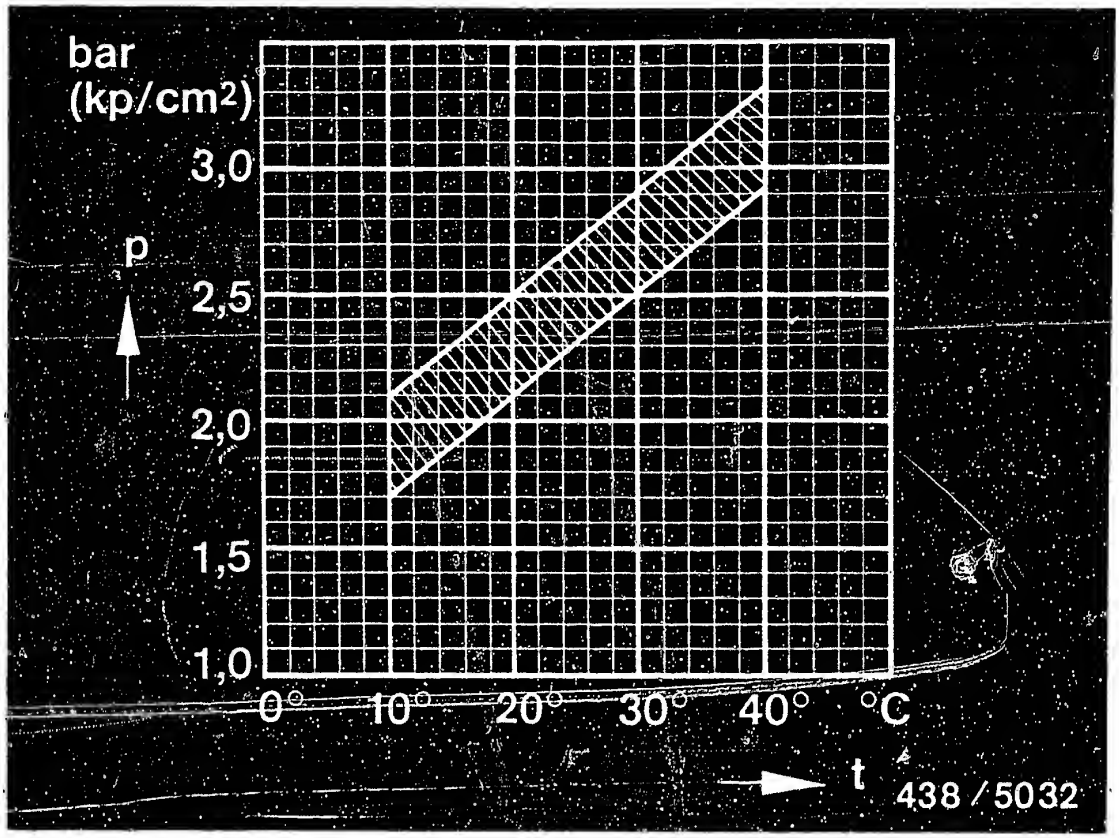
(Version with separate full-load enrichment)

- Fuel delivery for control-pressure circuit 160...240 cm^3/min.

- Control pressure "cold"

  For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting value: 400...600 mbar
  (300...450 mmHg)



p = Control pressure (gauge pressure)
t = Ambient temperature

Warm-up regulator 0 438 140 083 as of FD 047

(Version with separate full-load enrichment)

- Fuel delivery for control-pressure circuit 160...240 cm^3/min.

- Control pressure "cold"

  For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting value: 400...600 mbar
  (300...450 mmHg)

Test step

- Control pressure "warm"

  Warm-up regulator 0 438 140 083
  (Version with separate full-load enrichment)

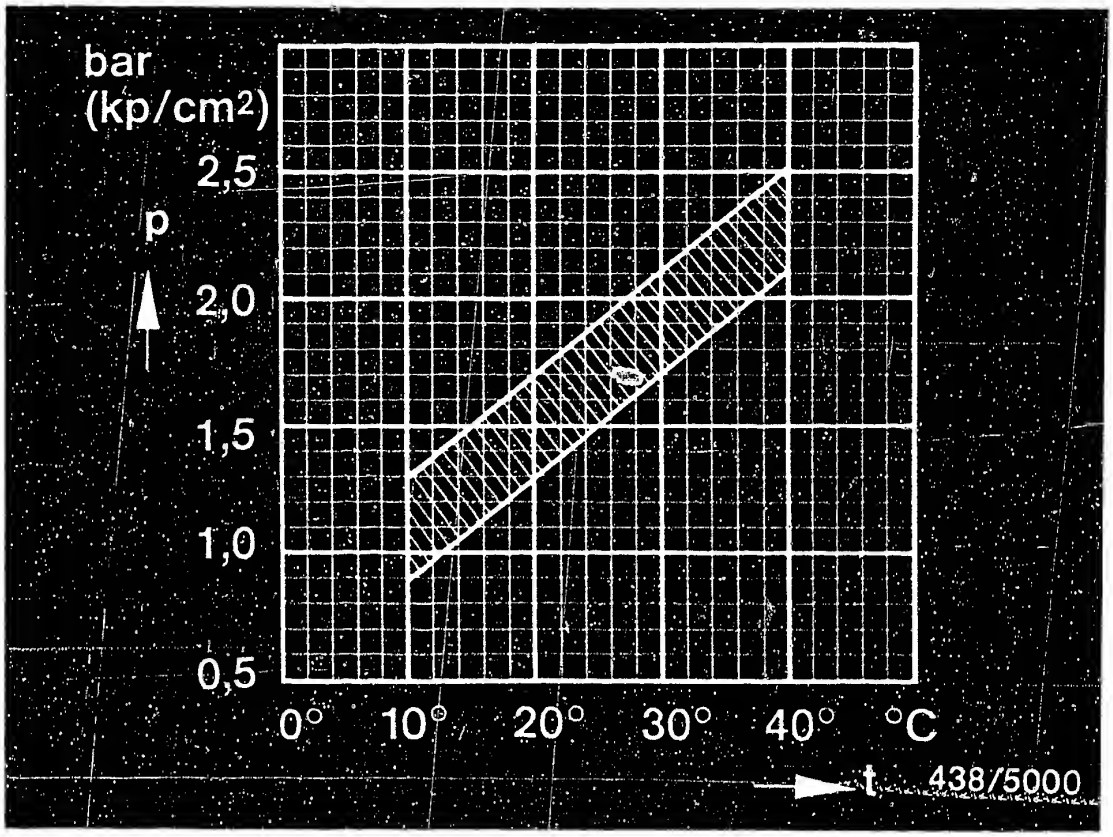
- Test with atmospheric pressure (without vacuum)
  2.5...2.9 bar*
  (2.6...3.0 kp/cm²)

- For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting values:
  400 ... 600 mbar 3.3...3.7 bar*
  (300 ... 450 mmHg (3.4...3.8 kp/cm²)

- Leak test on full-load diaphragm
  Max. allowable pressure drop
  from setting value: 100 mbar (75 mmHg) /15s

* Gauge pressure



p = Control pressure (gauge pressure)
t = Ambient temperature

3.3.4 Warm-up regulator 0 438 140 078

(Version with separate full-load enrichment)

- Fuel delivery for control-pressure circuit 160...240 cm^3/min.

- Control pressure "cold"

  For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting value: 400...600 mbar
  (300...450 mmHg)

Test step

- Control pressure "warm"

  Warm-up regulator 0 438 140 078
  (Version with separate full-load enrichment)

- Test with atmospheric pressure (without vacuum)
  2.55...2.95 bar*
  (2.65...3.05 kp/cm²)

- For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator:

  Setting values:
  400...600 mbar 3.4...3.8 bar*
  (300...450 mmHg) (3.5...3.9 kp/cm²)

- Leak test on full-load diaphragm
  Max. allowable pressure drop
  from setting value: 100 mbar (75 mmHg)/15s

3.4 Fuel accumulator 0 438 170 004

- Leak test
  Minimum pressure:

after 10 min	after 20 min
2.7 bar* (2.8 kp/cm²)	2.6 bar* (2.7 kp/cm²)

* Gauge pressure

Test step

3.5 Injection valve 0 438 502 010

- Opening pressure: 3.0...4.1 bar* (3.1...5.2 kp/cm²)
- Leak test:
  not below 2.8 bar*: no drop may fall within 25s.

3.6 Fuel distributor 0 438 100 034

- Comparative measurement of fuel deliveries:

	Setting point	max. allowable delivery
Idle	6.0 cm³/min.	6.6 cm³/min.
Part load	40.0 cm³/min.	43.0 cm³/min.
Full load	140.0 cm³/min.	155.0 cm³/min.
This delivery must be obtained at least at each outlet.		

* Gauge pressure

Test step

3.7 Thermo-time switch 0 280 130 220

- Resistance measurement between

at temperature below °C	above °C	Term. "G" and "ground" (housing)	Term. "W" and "ground" (housing)	Term. "G" and term. "W"
+30		40...60 Ω	0 Ω	40...60 Ω
	+40	50...70 Ω	240...300 Ω	180...240Ω

3.8 Idle adjustment *

- Idle speed 850...1150 min^{-1}

- CO concentration (of both cylinder banks) 0,8...1,2 vol. %

* For adjusting/checking the idle:
Switch off air conditioner, engine at normal operating temperature, oil temperature approx +80°C.

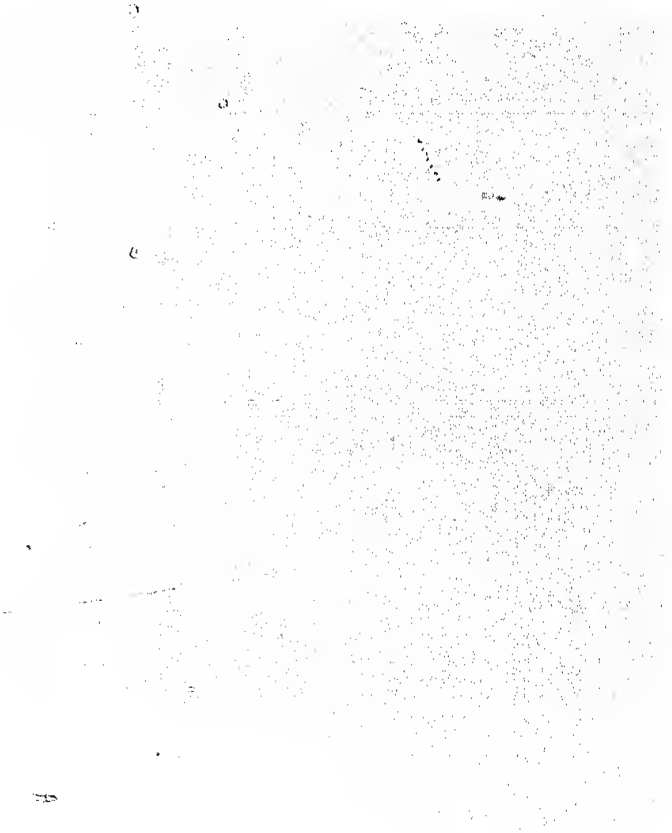
4. FERRARI

- Mondial 8
- 308 GTB
- 308 GTS i

  3.01 / 8-cylinder engine (1.1984-4.1985)

  3.21 / 8-cylinder engine (5.1985 →)

  US version with lambda closed-loop control



TEST SPECIFICATIONS

Test step	
4.1 Electric fuel pump	0 580 254 975
• Fuel delivery:	min. 1150 cm^3/30s
• Terminal voltage:	min. 11.5 V under load

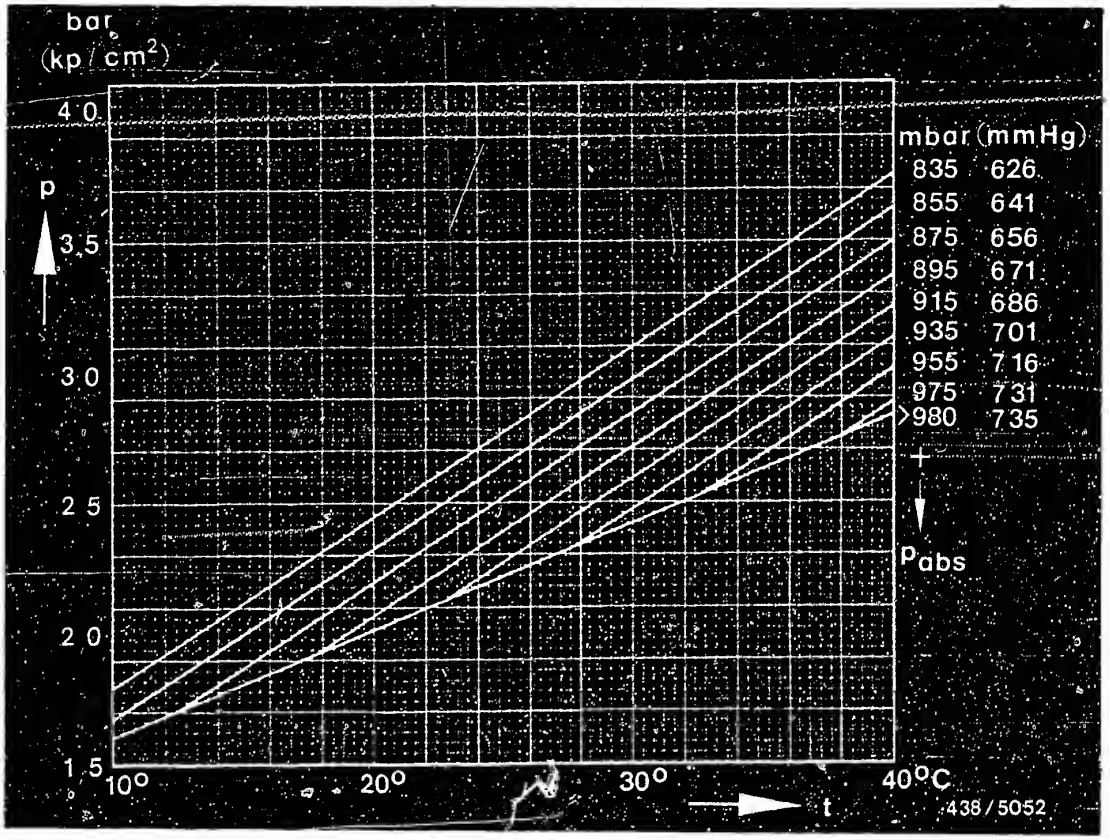
4.2 Fuel distributor	0 438 100 139	
• Primary pressure	Checking value	Setting value
	4.8...5.5 bar* (4.9...5.6 kp/cm^2)	5.0...5.2 bar* (5.1...5.2 kp/cm^2)

4.3 Warm-up regulator 0 438 140 132

(Version with altitude compensation)

• Delivery for control-pressure circuit 160...240 cm^3/min.

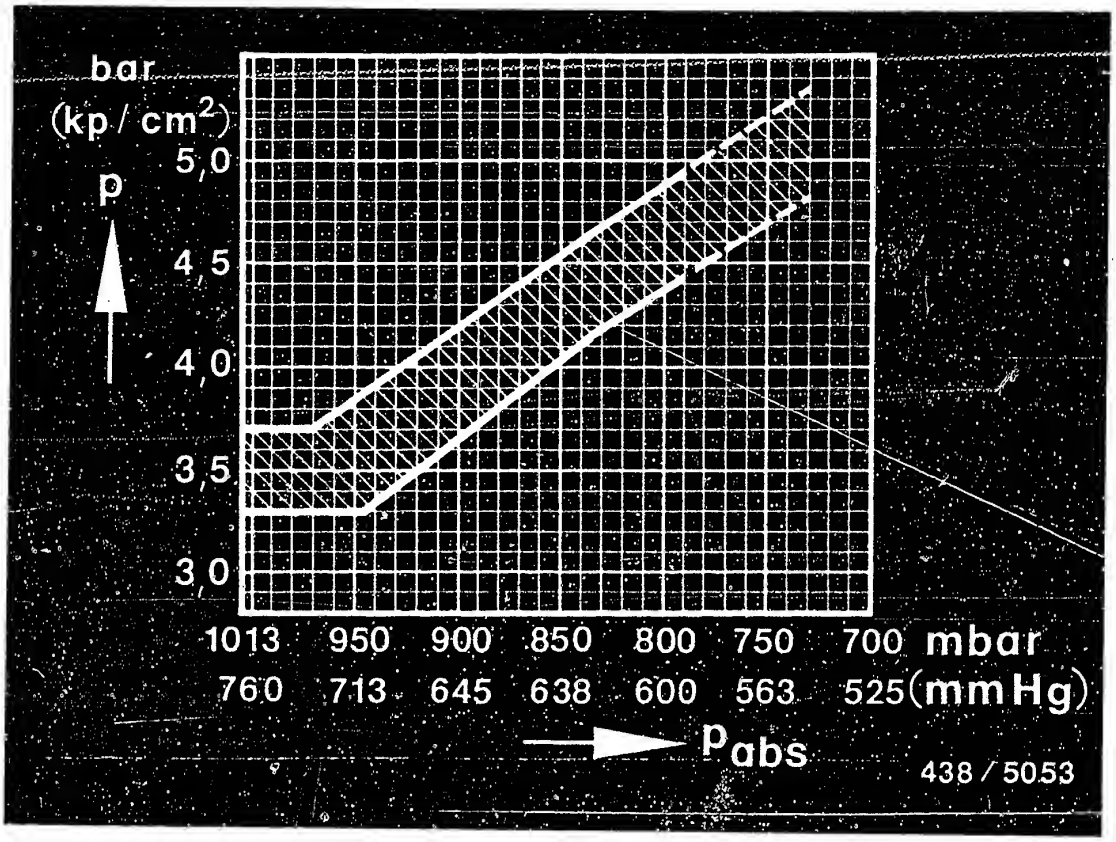
* Gauge pressure



p = Control pressure (gauge pressure)
t = Ambient temperature
Pabs = Air pressure

- Control pressure "cold"

  Take control pressure specification from graph in accordance with ambient temperature and atmospheric pressure. The basic curve for the control pressure is subject to a tolerance ± 0.2 bar.
  The altitude curves for the control pressure are subject to a tolerance of ± 0.25 bar.
  The basic curve applies to atmospheric pressure greater than 980 mbar (735 mmHg).



p = Control pressure (gauge pressure)
Pabs = Air pressure

- Control pressure "warm"

  Warm-up regulator 0 438 140 132
  (Version with altitude compensation)

  Measure the control pressure directly after the warm-up regulator has cut off.

Test step		
4.4 Fuel accumulator	0 348 170 004	
• Leak test Minimum pressure:	after 10 min	after 20 min
	2.7 bar* (2.8 kp/cm²)	2.6 bar* (2.7 kp/cm²)
4.5 Injection valves	0 437 502 010	
• Opening pressure:	3.0...4.1 bar* (3.1...4.2 kp/cm²)	
• Leak test not below 2.8 bar*. No drop may fall within 25s.		
4.6 Fuel distributor	0 438 100 139	
• Comparative measurement of fuel deliveries:		

	Setting point	max. allowable delivery
Idle	6.0 cm³/min	6.6 cm³/min
Part load	40.0 cm³/min	43.0 cm³/min
Full load	136.0 cm³/min	150.0 cm³/min
This delivery must be obtained at least at each outlet.		

* Gauge pressure

Test step

4.7 Thermo-time switch 0 280 130 217

- Resistance measurement between

at temperature below °C	above °C	Term. "G" and "ground" (housing)	Term. "W" and ground (housing)	Term. "G" and term. "W"
+40		30...40 Ω	0 Ω	30...40 Ω
	+50	55...85 Ω	120...160 Ω	55...85 Ω

4.8 Idle adjustment *

- Idle speed: 900...1100 min^{-1}
- CO concentration (of both cylinder banks) 0.50...1.0 vol. %

  with on/off ratio

  fluctuating
  checking value 25 ... 65 %
  setting value 50 %

* For adjusting/checking the idle:
Engine at normal operating temperature, oil temperature approx +80°C, switch off air conditioner.

Test step	
4.9 Lambda closed-loop control*	
• On/off ratios:	
t_0 (lean stop)	max. 20 %
t_1 (open loop control)	45...55 %
t_2 (rich stop)	min. 87 %
t_3 (warm-up)	55...65 %
t_4 (full-load enrichment)	55...65 %
Control fluctuating between:	25...65 %
Timing valve	
• Electrical internal resistance at +20°C;	2.0...3.0 Ω

* Functional test and adjustment of lambda closed-loop control:
Warm up engine with lambda sensor connected. Then disconnect sensor lead; adjust CO concentration. Re-connect sensor lead. CO concentration must now drop to max. 1.0 %. Checking the on/off ratios: a clear difference in reading must be detectable between t_2 and t_3.

5. FERRARI

- BB 512i

  5.0l / 12-cylinder engine (6.1981 →)
  Switzerland version

- BB 512i

  5.0l / 12-cylinder engine (6.1981-7.1984)
  Europe version

TEST SPECIFICATIONS

Test step

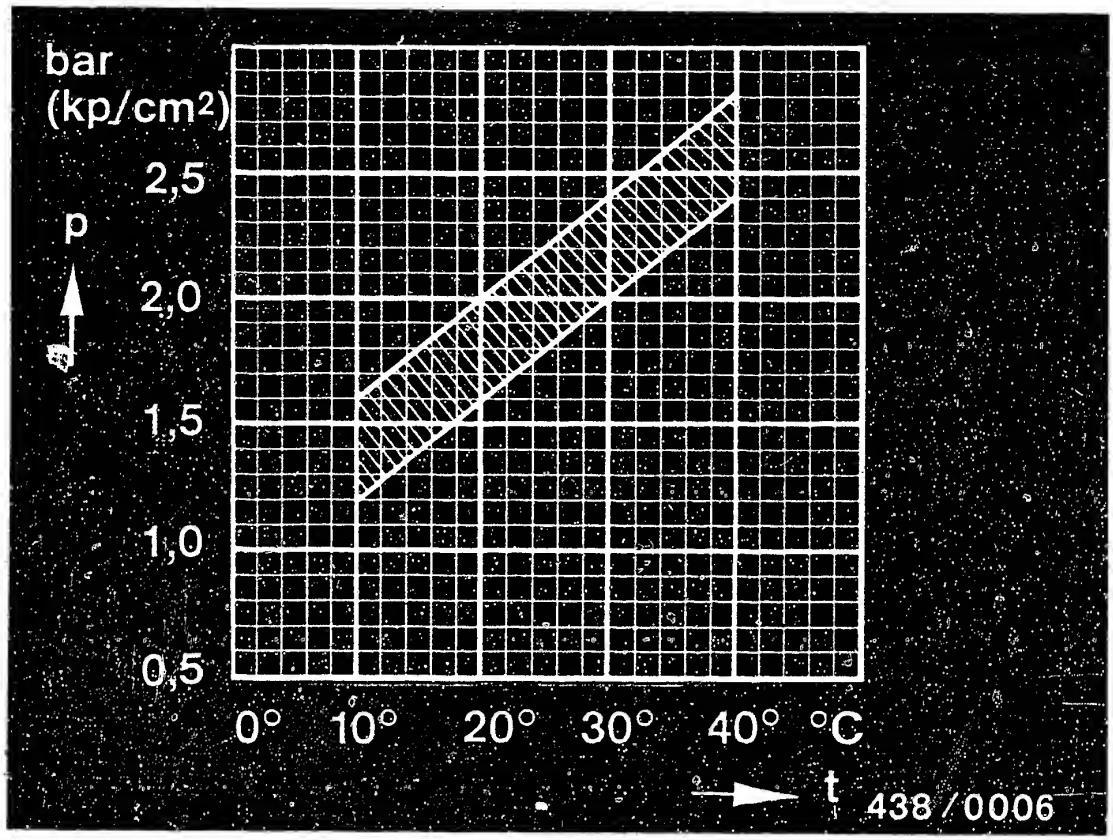
5.1 Electric fuel pump 0 580 254 975

- Fuel delivery: min. 950 cm^3/30s (per pump)
- Terminal voltage: min. 11.5 V under load

5.2 Fuel distributor 0 438 100 055

• Primary pressure	Checking value	Setting value
	4.9...5.6 bar* (5.0...5.7 kp/cm^2)	5.1...5.3 bar* (5.2...5.4 kp/cm^2)

* Gauge pressure



p = Control pressure (gauge pressure)
t = Ambient temperature

5.3 Warm-up regulator 0 438 140 105

(Version with separate full-load enrichment)

- Fuel delivery for control-pressure circuit 160...240 cm^3/min.

- Control pressure "cold"

  For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting value: 400...600 mbar
  (300...450 mmHg)

Test step

- Control pressure "warm"

  Warm-up regulator 0 438 140 105
  (Version with separate full-load enrichment)

- Test with atmospheric pressure (without vacuum)
  2.35...2.75 bar*
  (2.45...2.85 kp/cm²)

- For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator:

  Setting values:
  400...600 mbar 3.3...3.7 bar*
  (300...450 mmHg) (3.4...3.8 kp/cm²)

- Leak test on full-load diaphragm
  Max. allowable pressure drop
  from setting value: 100 mbar (75 mmHg)/15s

5.4 Fuel accumulator 0 438 170 004

- Leak test
  Minimum pressure:

after 10 min	after 20 min
2.7 bar* (2.8 kp/cm²)	2.6 bar* (2.7 kp/cm²)

* Gauge pressure

Test step

5.5 Injection valve 0 438 502 010

- Opening pressure: 3.0...4.1 bar* (3.1...4.2 kp/cm²)
- Leak test:
  not below 2.8 bar*: no drop may fall within 25s.

5.6 Fuel distributor 0 438 100 055

- Comparative measurement of fuel deliveries:

	Setting point	max. allowable delivery
Idle	6.0 cm³/min.	6.6 cm³/min.
Part load	40.0 cm³/min.	43.0 cm³/min.
Full load	145.0 cm³/min.	160.0 cm³/min.
This delivery must be obtained at least at each outlet.		

* Gauge pressure

Test step

5.7.1 Thermo-time switch 0 280 130 219

Switzerland version

- Resistance measurement between

at temperature below °C	above °C	Term. "G" and "ground" (housing)	Term. "W" and "ground" (housing)	Term. "G" and term. "W"
+10		50...70 Ω	0 Ω	50...70 Ω
	+20	50...70 Ω	∞ Ω	∞ Ω

5.7.2 Thermo-time switch 0 280 130 220

Europe version

- Resistance measurement between

at temperature below °C	above °C	Term. "G" and "ground" (housing)	Term. "W" and "ground" (housing)	Term. "G" and term. "W"
+30		40...60 Ω	0 Ω	40...60 Ω
	+40	50...70 Ω	240...300 Ω	180...240Ω

Test step	
5.8 Idle adjustment *	
• Idle speed (with synchronized intake-manifold pressure)	850...950 min^{-1}
• CO concentration (of both cylinder banks)	1.0...1.5 vol. %

* For adjusting/checking the idle: switch off air conditioner, engine at normal operating temperature, oil temperature approx +80°C, exhaust-gas recirculation (if applicable) inoperative.

6. FERRARI

- Testarossa

  5.01 / 12-cylinder engine (7.1984 →)

  Europe version

TEST SPECIFICATIONS

Test step

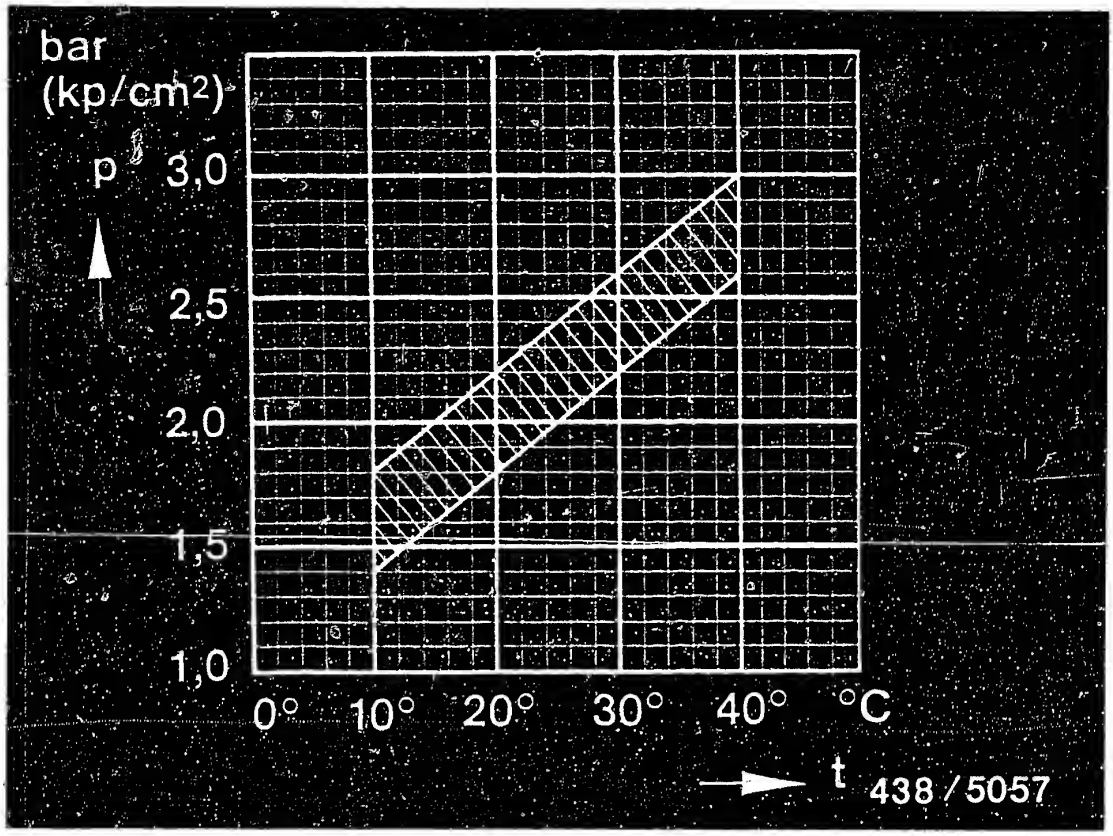
6.1 Electric fuel pump 0 580 254 947

- Fuel delivery: min. 1150 cm³ /30s
- Terminal voltage: min. 11.5 V (under load)

6.2 Fuel distributor 0 438 100 055

	Checking values	Setting value
• Primary pressure	4.9...5.6 bar* (5.0...5.7 kp/cm²)	5.1...5.3 bar* (5.2...5.4 kp/cm²)

* Gauge pressure



p = Control pressure (gauge pressure)
t = Ambient temperature

6.3 Warm-up regulator 0 438 140 116

(Version with separate full-load enrichment)

- Fuel delivery for control-pressure circuit 160...240 cm^3/min.

- Control pressure "cold"

  For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator.

  Setting value: 400...600 mbar
  (300...450 mmHg)

Test step

- Control pressure "warm"

  Warm-up regulator 0 438 140 116
  (Version with separate full-load enrichment)

- Test with atmospheric pressure (without vacuum)
  2.7...3.1 bar*
  (2.8...3.2 kp/cm²)

- For testing, connect vacuum pump to intake-manifold pressure connection of warm-up regulator:

  Setting values:
  400...600 mbar (300...450 mmHg) 3.5...3.9 bar* (3.6...4.0 kp/cm²)

- Leak test on full-load diaphragm
  Max. allowable pressure drop from setting value: 100 mbar (75 mmHg)/15s

6.4 Fuel accumulator 0 438 170 004

- Leak test
  Minimum pressure:

after 10 min	after 20 min
2.7 bar* (2.8 kp/cm²)	2.6 bar* (2.7 kp/cm²)

* Gauge pressure

Test step

6.5 Injection valve 0 438 502 010

- Opening pressure: 3.0...4.1 bar* (3.1...4.2 kp/cm²)
- Leak test:
  not below 2.8 bar*: no drop may fall within 25s.

6.6 Fuel distributor 0 438 100 055

- Comparative measurement of fuel deliveries:

	Setting point	max. allowable delivery
Idle	6.0 cm³/min.	6.6 cm³/min.
Part load	40.0 cm³/min.	43.0 cm³/min.
Full load	145.0 cm³/min.	160.0 cm³/min.
This delivery must be obtained at least at each outlet.		

* Gauge pressure

Test step

6.7 Thermo-time switch 0 280 130 220

- Resistance measurement between

at temperature below °C	above °C	Term. "G" and "ground" (housing)	Term. "W" and "ground" (housing)	Term. "G" and term. "W"
+30		40...60 Ω	0 Ω	40...60 Ω
	+40	50...70 Ω	240...300 Ω	180...240Ω

6.8 Idle adjustment *

- Idle speed (at synchronized intake-manifold pressure) — 800...1150 min^{-1}
- CO concentration (of both cylinder banks) — 0.6...0.8 vol. %

* For adjusting/checking the idle:
Switch off air conditioner, engine at normal operating temperature, oil temperature approx +80°C.

After-sales Service

Technical Bulletin

Securing of idle-speed adjusting screws

K-Jetronic (CIS)

438

VDT-I-438/102 B
11.1976

According to a statutory regulation, changes have been made to § 47 of the German traffic licensing laws concerning exhaust gases and their outlets. This regulation was printed in full in traffic law sheet 13 of 15.7.75 .

Consequently, all motor vehicles with external-ignition engines must have their idle-speed adjusting devices secured from the 1st October 1976, so that adjustment of the screw is impossible without destroying the securing device. This should stop unskilled people from adjusting the installation of the idle-speed system and thereby illegally influencing the emission values. As from now, securing caps can only be used in the workshop and cannot be sold to customers for their own use.

Securing caps are produced in various colors. For after-sales service the following caps and colors are used:

downdraft air-flow sensor
Blue — securing cap is not available from BOSCH. Part number is DB 000.997.59 86 from the Deutsche Vergaser Gesellschaft K 34 520

updraft air-flow sensor
Red — Part number 3 430 522 002

These stipulations are only valid in countries where ECE regulations (Economic Commission for Europe) apply. The air-flow sensors must however be converted for the use of these securing caps, as a matter of principle. The caps can also be used in countries not subject to ECE regulations, to prevent dirt penetrating through the pipe to the adjustment in the case of updraft air-flow sensors.

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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